PROJECT INFORMATION

Project Title	Mountain Home Fuel Load Reduction Project
Brief Description	Mountain Home Demonstration State Forest (MHDSF) is located in Tulare County in the Southern Sierra Nevada range, 22 miles east of Porterville, California. Mountain Home has several of the largest and oldest giant sequoia trees in the world with some reaching 240 feet tall and 27 feet in diameter. Some of the 5,000 old-growth giant sequoias are more than 2,000 years old, the giant sequoia flourishes among ponderosa pine, sugar pine, white fir and incense-cedar. In addition to a diverse flora and fauna recreational opportunities are abound. There are 5 public campgrounds, 3 fishing ponds and access, via trails, to endless United Forest Service property including the Golden Trout Wilderness. There are seventeen areas within the bounds of Mountain Home Demonstration State Forest (MHDSF) that have been identified for fuel treatment by means of mechanical mastication. They range in size from 20 acres to 185 acres. These areas are located in the mixed conifer forest type as is typical for the southern Sierra Nevada. Mastication has been identified as an appropriate method for fuel treatment at MHDSF among other suitable methods. This alternative was evaluated and discussed in the 2010 revision of the General Forest Management Plan (GFMP) Mitigated Negative Declaration (MND) which was reviewed by the State Clearing House on February 17, 2010 and approved by the Board of Forestry and Fire Protection on March 11, 2010. If we are given the grant money, we will utilize mastication equipment on 310 acres to modify fuels. The masticator is a small bobcat with a head that masticates vegetation down to within 6 inches of the top soil. The masticator will utilize benches and existing skid trails to access workable areas. The areas deemed appropriate for mastication are generally accessible by tracked equipment on slopes that range from 0 to 35%. Small biological islands shall be retained within the treated areas to provide for species diversity, thermal cover and aesthetics. The clumps and patches will generally range from 0.1 to 0.25 acres in size. In the treatment areas, at least 75% of the brush and downed material shall be treated. Conifers that are not of merchantable size (generally less than 12” DBH) shall be thinned to a variable spacing of 12 to 25 feet, depending on the species. Untreated areas shall include rock outcroppings, over steepened ground, biologic islands, and prohibited areas. The resulting treated material will be left as is or later scheduled for broadcast burning for ecological reasons. Burning will not be included in the budget for this grant; however, it will take place after the grant is over. Science has shown that giant sequoia requires bare mineral soil and ash on the forest floor to naturally regenerate. Furthermore, heat rising

	into the forest canopy is necessary to open the serotinous cones of this species. Without the combination of assets provided by fire, giant sequoia will not regenerate naturally from seed. Other areas proposed for mastication include strategic fuel break areas, infrastructure, and access routes that provide for ingress and egress. Given MHDSF's remote location, a proactive stance against wildfire to protect watersheds, forest, habitat and the public is prudent because emergency response vehicles are over an hour away. This project is considered the hub of most fuel break projects in Tulare County because it will connect with the Rancheria Fuel Break , and the Happy Camp Fuel Break (both done under Prop 40) on the West side of the Sierra Nevada Mountain range. On the east side of the Sierra Nevada Mountain Range, it will connect to various U.S.F.S. planned projects, and a multitude of projects identified in our Tulare County Wildfire Protection Plan (CWPP). The end results will be significant for both the human occupants of MHDSF and the biologic communities with in the forest. Because this project is the hub of our fuel modification projects it will act as a force multiplier having a greater effect on the watershed (water quality and quantity, forest health, wildfire prevention and wildlife habitat improvement. By connecting the fuel breaks, we will decrease the chance of a catastrophic wildfire which can affect the soil, water, air, animals, plants and people who recreate in this forest. The end result for the recreation enthusiasts will be a safer place to recreate in a more aesthetically pleasing environment. By reducing fuels in strategic locations we are protecting the watershed from very hot intense fires that would result in contaminates entering tributaries that run into the Tule River and Lake Success. In addition to protecting water quality, we will be increasing water quantity available to humans; flora and fauna do to decreased transpiration of water into the atmosphere from plants. Forest health will improve by improving spacing, age class and composition of the trees within the various treatment areas.
Total Requested Amount	350,000.00
Other Fund Proposed	20,000.00
Total Project Cost	370,000.00
Project Category	Site Improvement/Restoration
Project Area/Size	671
Project Area Type	Acres

Have you submitted to SNC this fiscal year?	No
Is this application related to other SNC funding?	No

Project Results
Infrastructure development/improvement

Project Purpose	**Project Purpose Percent**
Water Quality	

County
Tulare

Sub Region
South

PROJECT CONTACT INFORMATION

Name	Mr. David Witt,
Title	Grant Manager
Organization	Tulare County Resource Conservation District Sequoia Fire Safe Council
Primary Address	3530 West Orchard Court, , , Visalia, CA, 93277-7055
Primary Phone/Fax	661-319-3308 **Ext.**
Primary Email	ddwconsulting@aol.com

PROJECT LOCATION INFORMATION

Project Location	
Address:	Mountain Home Demonstration State Forest, , , Springville, CA, 93265 United States
Water Agency:	Springville Public Utility
Latitude:	36.231535
Longitude:	-118.67843
Congressional District:	n/a
Senate:	n/a
Assembly:	n/a
Within City Limits:	No
City Name:	

ADDITIONAL INFORMATION

Grant Application Type

Grant Application Type: **Category One Site Improvement**
Grant Application Type: **Category One Site Improvement**

PROJECT OTHER CONTACTS INFORMATION

Other Grant Project Contacts	
Name:	Mr. David Witt,
Project Role:	Day-to-Day Responsibility
Phone:	6613193308
Phone Ext:	
E-mail:	ddwconsulting@aol.com

UPLOADS

The following pages contain the following uploads provided by the applicant:

Upload Name
Completed Application Checklist
Table of Contents
Full Application Form
Authorization to Apply or Resolution
Narrative Descriptions
Detailed Budget Form
Restrictions/Agreements
Restrictions/Agreements
Restrictions/Agreements
Letters of Support
Letters of Support
Letters of Support
Letters of Support
Long Term Management Plan

Photos of the Project Site
Photos of the Project Site
Photos of the Project Site
Photos of the Project Site
Photos of the Project Site
Photos of the Project Site
Photos of the Project Site
Photos of the Project Site
Photos of the Project Site
Photos of the Project Site
Photos of the Project Site
Parcel Map Showing County Assessors Parcel Number
Parcel Map Showing County Assessors Parcel Number
Site Plan - Only Site Improv. or Restoration Proj.
Land Tenure- Only for Site Improvement Projects
Land Tenure- Only for Site Improvement Projects
Topographic Map

Project Location Map

To preserve the integrity of the uploaded document, headers, footers and page numbers have not been added by the system.

Appendix B1
Full Application Checklist

Project Name: Mountain Home Fuel Load Reduction Project

Applicant: Tulare County Resource Conservation District

Please mark each box: check if item is included in the application; mark "N/A" if not applicable to the project. "N/A" identifications must be explained in the application. Please consult with SNC staff prior to submission if you have any questions about the applicability to your project of any items on the checklist. All applications must include a CD including an electronic file of each checklist item, if applicable. The naming convention for each electronic file is listed after each item on the checklist. (Electronic File Name = EFN: "naming convention". file extension choices)

Submission requirements for all Category One and Category Two Grant Applications

1. ☒ Completed Application Checklist *(EFN: Checklist.doc,.docx,.rtf, or .pdf)*

2. ☒ Table of Contents *(EFN: TOC.doc,.docx,.rtf, or .pdf)*

3. ☒ Full Application Project Information Form *(EFN: SIform.doc, .docx, .rtf, or .pdf)*

4. ☒ Authorization to Apply or Resolution *(EFN: authorization.doc, .docx, .rtf, or .pdf)*

5. ☒ Narrative Descriptions - Submit a single document that includes each of the following narrative descriptions *(EFN: Narrative.doc, .docx, .rtf)*
   a. ☒ Detailed Project Description (5,000 character maximum)
      - ☒ Project Description including Goals/Results, Scope of Work, Location, Purpose, etc.
      - ☒ Project Summary
      - ☒ Environmental Setting
   b. ☒ Workplan and Schedule (1,000 character maximum)
   c. ☒ Restrictions, Technical/Environmental Documents and Agreements(1,000 character maximum)
   d. ☒ Organizational Capacity(1,000 character maximum)
   e. ☒ Cooperation and Community Support (1,000 character maximum)
   f. ☒ Long Term Management and Sustainability (1,000 character maximum)
   g. ☒ Performance Measures (1,000 character maximum)

6. Supplemental and Supporting documents
   a. ☒ Detailed Budget Form (EFN: Budget.xls, .xlsx)
   b. Restrictions, Technical/Environmental Documents and Agreements, as applicable
      - ☒ *Restrictions / Agreements (EFN: RestAgree.pdf)*
      - ☐ Regulatory Requirements / Permits *(EFN: RegPermit.pdf)*

- ☒ California Environmental Quality Act (CEQA) documentation *(EFN: CEQA.pdf)*
- ☐ National Environmental Policy Act (NEPA) documentation *(EFN: NEPA.pdf)*

c. Cooperation and Community Support
- ☒ Letters of Support *(EFN: LOS.pdf)*

d. Long-Term Management and Sustainability
- ☒ Long-Term Management Plan *(EFN: LTMP.pdf)*

e. Maps and Photos
- ☒ Project Location Map *(EFN: LocMap.pdf)*
- ☒ Parcel Map showing County Assessor's Parcel Number(s) *(EFN: ParcelMap.pdf)*
- ☒ Topographic Map *(EFN: Topo.pdf)*
- ☒ Photos of the Project Site *(10 maximum) (EFN: Photo.jpg, .gif)*

f. Additional submission requirements <u>for Conservation Easement Acquisition applications only</u>
- ☐ Acquisition Schedule *(EFN: acqSched.doc,.docx,.rtf,.pdf)*
- ☐ Willing Seller Letter *(EFN: WillSell.pdf)*
- ☐ Real Estate Appraisal *(EFN: Appraisal.pdf)*
- ☐ Conservation Easement Language *(EFN: CE.pdf)*

g. Additional submission requirements <u>for Site Improvement / Restoration Project applications only</u>
- ☒ Land Tenure Documents – attach only if documentation was not included with Pre-application *(EFN: Tenure.pdf)*
- ☒ Site Plan *(EFN: SitePlan.pdf)*
- ☐ Leases or Agreements *(EFN: LeaseAgmnt.pdf)*

I certify that the information contained in the Application, including required attachments, is accurate.

Signed *(Authorized Representative)* — Date: 12/21/11

TOM DALY President
Name and Title *(print or type)*

Table of Contents

Appendix B2

Note: You can only save data in this form if you are using Adobe Acrobat Pro. If you are not using Adobe Acrobat Pro, click here for a Microsoft Word version of this form, which you can fill out and save.

SIERRA NEVADA CONSERVANCY
PROPOSITION 84 - PROJECT INFORMATION FORM

Rev. August 2011

PROJECT NAME Mountain Home Fuel Load Reduction Project

APPLICANT NAME Tulare County Resource Conservation District, 3530 West Orchard Court, Visalia, Ca 93277

PERSON WITH FISCAL MANAGEMENT RESPONSIBILITY FOR GRANT CONTRACT/INVOICING

Name and title – type or print	*Phone*	*Email Address*
☐Mr.		
☒Ms. Terri Van Huss	(559)901-2073	vanhuss@pacbell.net

COUNTY ADMINISTRATOR OR PLANNING DIRECTOR CONTACT INFORMATION *(At least one entry Is required)*

Name: Jean M. Rousseau *Phone Number:(559)636-5005*

Email address: phogue@co.tulare.ca.us

Name: Jake Raper *Phone Number (559)730-2653*

Email address: jraper@co.tulare.ca.us

NEAREST PUBLIC WATER AGENCY (OR AGENCIES) CONTACT INFORMATION *(At least one entry Is required)*

Name: Springville Public Utility *Phone Number (559)539-2869*

Email address: spud@springvillewireless.com

Name: Strathmore Public Utility *Phone Number: (559)568-1613*

Email address: Strathmore@spudh20.org

Please identify the appropriate project category below and provide the associated details *(Choose One)*

☒ Category One Site Improvement ☐ Category Two Pre-Project Activities

☐ Category One Conservation Easement Acquisition

☒ **Site Improvement/Conservation Easement Acquisition**

Project area: 671

Total Acres: 310 treated

SNC Portion (if different): _____

Total Miles (i.e. river or stream bank):_____

SNC Portion (if different): _____

Select one primary Site Improvement/Conservation Easement Acquisition deliverable

☐ Restoration
☐ Enhancement
☐ Resource Protection
☐ Infrastructure Development / Improvement
☐ Conservation Easement

For Conservation Easement Acquisitions Only ☐ Appraisal Included ☐ Will submit appraisal by_____	
☐ **Pre-Project Activities**	**Select <u>one</u> primary Pre-Project deliverable** ☐ Permit ☐ CEQA/NEPA Compliance ☐ Appraisal ☐ Plan ☐ Condition Assessment ☐ Biological Survey ☐ Environmental Site Assessment

Tulare County Resource Conservation District

3530 W. Orchard Court ~ Visalia, CA 93277
phone: (559) 734- 8732 ext. 3 ~ fax (559) 732-2805

To: Sierra Nevada Conservancy 12-21-2011

The Tulare County RCD is a special district under the state of California and therefore we are writing a letter of authorization. This is a letter of authorization to apply for and conduct the project titled "Mountain Home Fuel Load Reduction Project". The authorized representative to sign documents for this grant will be the President, Tom Daly and the Secretary/Treasurer Warren Hutchins. We have identified two parties because they both are out of town for extensive periods. The board of directors of the Tulare County RCD looks forward to implementing the next phase in natural resource management along with our many partners.

Sincerely,

Tom Daly
President

5a. Detailed Project Description Narrative

Mountain Home Demonstration State Forest (MHDSF) is located in Tulare County in the Southern Sierra Nevada range, 22 miles east of Porterville, California. Mountain Home has several of the largest and oldest giant sequoia trees in the world with some reaching 240 feet tall and 27 feet in diameter. Some of the 5,000 old-growth giant sequoias are more than 2,000 years old, the giant sequoia flourishes among ponderosa pine, sugar pine, white fir and incense-cedar. In addition to a diverse flora and fauna recreational opportunities are abound. There are 5 public campgrounds, 3 fishing ponds and access, via trails, to endless United Forest Service property including the Golden Trout Wilderness.

There are seventeen areas within the bounds of Mountain Home Demonstration State Forest (MHDSF) that have been identified for fuel treatment by means of mechanical mastication. They range in size from 20 acres to 185 acres. These areas are located in the mixed conifer forest type as is typical for the southern Sierra Nevada. Mastication has been identified as an appropriate method for fuel treatment at MHDSF among other suitable methods. This alternative was evaluated and discussed in the 2010 revision of the General Forest Management Plan (GFMP) Mitigated Negative Declaration (MND) which was reviewed by the State Clearing House on February 17, 2010 and approved by the Board of Forestry and Fire Protection on March 11, 2010.

If we are given the grant money, we will utilize mastication equipment on 310 acres to modify fuels. The masticator is a small bobcat with a head that masticates vegetation down to within 6 inches of the top soil. The masticator will utilize benches and existing skid trails to access workable areas. The areas deemed appropriate for mastication are generally accessible by tracked equipment on slopes that range from 0 to 35%. Small biological islands shall be retained within the treated areas to provide for species diversity, thermal cover and aesthetics. The clumps and patches will generally range from 0.1 to 0.25 acres in size.

In the treatment areas, at least 75% of the brush and downed material shall be treated. Conifers that are not of merchantable size (generally less than 12” DBH) shall be thinned to a variable spacing of 12 to 25 feet, depending on the species. Untreated areas shall include rock outcroppings, over steepened ground, biologic islands, and prohibited areas.

The resulting treated material will be left as is or later scheduled for broadcast burning for ecological reasons. Burning will not be included in the budget for this grant; however, it will take place after the grant is over. Science has shown that giant sequoia requires bare mineral soil and ash on the forest floor to naturally regenerate. Furthermore, heat rising into the forest canopy is necessary to open the serotinous cones of this species. Without the combination of assets provided by fire, giant sequoia will not regenerate naturally from seed.

Other areas proposed for mastication include strategic fuel break areas, infrastructure, and access routes that provide for ingress and egress. Given MHDSF’s remote location, a proactive stance against wildfire to protect watersheds, forest, habitat and the public is prudent because emergency response vehicles are over an hour away.

This project is considered the hub of most fuel break projects in Tulare County because it will connect with the Rancheria Fuel Break , and the Happy Camp Fuel Break (both done under Prop 40) on the West side of the Sierra Nevada Mountain range. On the east side of the Sierra Nevada Mountain Range, it will connect to various U.S.F.S. planned projects, and a multitude of projects identified in our Tulare County Wildfire Protection Plan (CWPP).

The end results will be significant for both the human occupants of MHDSF and the biologic communities with in the forest. Because this project is the hub of our fuel modification projects it will act as a force multiplier having a greater effect on the watershed (water quality and quantity, forest health, wildfire prevention and wildlife habitat improvement. By connecting the fuel breaks, we will decrease the chance of a catastrophic wildfire which can affect the soil, water, air, animals, plants and people who recreate in this forest.

The end result for the recreation enthusiasts will be a safer place to recreate in a more aesthetically pleasing environment.

By reducing fuels in strategic locations we are protecting the watershed from very hot intense fires that would result in contaminates entering tributaries that run into the Tule River and Lake Success. In addition to protecting water quality, we will be increasing water quantity available to humans; flora and fauna do to decreased transpiration of water into the atmosphere from plants.

Forest health will improve by improving spacing, age class and composition of the trees within the various treatment areas. As a result of the above referenced treatment, the horizontal and vertical diversity of the wildlife habitat found at the MHDSF will improve as well.

5b. Work plan and Schedule Narrative

Assuming a commencement date of September 15, 2012, operations shall occur at the following rate. It is anticipated that 1 to 3 acres will be treated per day dependant upon vegetation and topographic constraints. Therefore, an average production rate of 1.5 acres per day shall be utilized. With that being said, at least 30 acres per month will be treated with shut down periods due to inclement weather and ensuing saturated soil conditions. During a typical operation season, the forest is closed from mid-November to mid-June. At an average of 30 acres per month it will likely take 10 to 11 full months to complete the project. Estimated date of completion is December 30, 2013.

Detailed Project Deliverables	**Timeline**	**Cost**
Treat 60 acres of vegetation	From September 15, 2012 to November 15, 2012	$70,000
Write Progress Report	15-Mar-13	
Treat 250 acres of vegetation	From June 1, 2013 to December 30, 2013	$280,000
Project completion/final report	30-Dec-13	

5c. Restrictions, Technical/Environmental Documents and Agreements Narrative
No property restrictions exist, other then access during the winter months do to snow.

We have completed similar projects on two sides of Mountain Home State Forest successfully and all of the local cooperators support the project.

The project was subject to CEQA analysis (mitigated negative declaration, please see attached documents). This alternative was evaluated and discussed in the 2010 revision of the General Forest Management Plan (GFMP) Mitigated Negative Declaration (MND) which was reviewed by the State Clearing House on February 17, 2010 and approved by the Board of Forestry and Fire Protection on March 11, 2010.

5d. Organization Capacity Narrative
The mission of the Tulare County RCD is to protect and enhance the natural resources of Tulare County while ensuring the economic sustainability of our communities. The RCD has been in existence for over 50 years because of active dedicated directors. The RCD, currently, has four directors and one associate director. During this time, the RCD has completed numerous natural resource based grants in a timely manner. The following is a list of projects and the year they were completed; Potholes Shaded Fuel Break (Prop 40, 2007), TRIR Northern Boundary Phase (2008), Blue Ridge Fuel Break (Prop. 40, 2009), Grouse Fuel Break (Prop 40, 2009), Fish and Wildlife Service Assessment and Mitigation Plan (2009), Crawford Fuels Project (2009), Black Mtn Shaded Fuel Break 2011, Badger Fuel Break (2011) and Tulare County CWPP (SNC, 2011).

The Tulare County RCD predominantly consists of volunteers (directors and associates). Currently, paid contractors include grant manager/project manager (David Witt), who is a Certified rangeland manager under the Board of Forestry, a bookkeeper (Terri Van Huss) and an administration assistant Bob Puls. The grant manager and bookkeeper have been with the TCRCD for over 9 years and have worked on numerous federal and state grants under the direction of the president, who has been with the TCRCD for over 10 years.

For this project, the following people will work on this project: Jim Kral RPF with Cal Fire (Mt. Home Manager), Terri Van Huss (Book Keeper), Bob Puls (Administration), David Witt (Project Management and Administration) and the Board of Directors for the Tulare RCD.

5e. Cooperation and Community Support Narrative
This project was identified in both the Tulare County Community Wildfire Protection Plan and the Mountain Home Demonstration State Forest Management Plan of 2010. The project was developed as part of a collaborative process with multiple agencies which include USFS, USFWS, Cal Fire, Sequoia FSC, BLM, Tulare County RCD, and the public at large.

The following groups have written a letter of support and they are attached for your review: Mountain Home State Forest, Cal Fire, Sequoia Fire Safe Council, Bureau of Land Management and the United States Fish and Wildlife Service.

5f. Long-term Management and Sustainability Narrative

The treated areas will be maintained via prescribed fire and or herbicide application as described in the MHDSF Management Plan. Maintenance activities shall be performed on an “as needed” basis determined by the Forest Manager. Periodic maintenance treatments are anticipated to be performed at regular intervals ranging from 3 to 7 years. There are 5 fire crews in the Tulare Unit that will be available in the winter months to help burn enabling the maintenance of this project.

5g. Performance Measures Narrative

1. Acres of land improved or restored.
2. Number and types of jobs created.
3. Resources Leveraged for the Sierra Nevada Conservancy.

Appendix B3

SIERRA NEVADA CONSERVANCY
PROPOSITION 84 - DETAILED BUDGET FORM

Project Name: Mountain Home Fuel Load Reduction Project
Applicant: Tulare County Resource Conservation District

SECTION ONE DIRECT COSTS	**Year One**	**Year Two**	**Year Three**	**Year Four**	**Year Five**	**Total**
Project Management Costs	$8,000.00	$8,000.00				$16,000.00
Site Implementation Work Costs	$155,000.00	$155,000.00				$310,000.00
Mileage	$1,000.00	$1,000.00				$2,000.00
						$0.00
						$0.00
						$0.00
						$0.00
DIRECT COSTS SUBTOTAL:	$164,000.00	$164,000.00	$0.00	$0.00	$0.00	$328,000.00

SECTION TWO INDIRECT COSTS	**Year One**	**Year Two**	**Year Three**	**Year Four**	**Year Five**	**Total**
Monitoring	$1,000.00	$1,000.00				$2,000.00
Liability Insurance	$2,000.00	$2,000.00				$4,000.00
						$0.00
						$0.00
INDIRECT COSTS SUBTOTAL:	$3,000.00	$3,000.00	$0.00	$0.00	$0.00	$6,000.00
PROJECT TOTAL:	$167,000.00	$167,000.00	$0.00	$0.00	$0.00	$334,000.00

SECTION THREE Administrative Costs (Costs may n*ot to exceed 15% of total Project Cost*) :						**Total**
**Organization operating/overhead costs*	$8,000.00	$8,000.00				$16,000.00
						$0.00
						$0.00
						$0.00
						$0.00
ADMINISTRATIVE TOTAL:	$8,000.00	$8,000.00	$0.00	$0.00	$0.00	$16,000.00
SNC TOTAL GRANT REQUEST:	$175,000.00	$175,000.00	$0.00	$0.00	$0.00	$350,000.00

SECTION FOUR OTHER PROJECT CONTRIBUTIONS	**Year One**	**Year Two**	**Year Three**	**Year Four**	**Year Five**	**Total**
List other funding or in-kind contibutors to project (i.e. Sierra Business Council, Department of Water Resources, etc.)						
Project Management	$10,000.00	$10,000.00				$20,000.00
						$0.00
						$0.00
						$0.00
						$0.00
						$0.00
Total Other Contributions:	$10,000.00	$10,000.00	$0.00	$0.00	$0.00	$20,000.00

NOTE: The categories listed on this form are examples and may or may not be an expense related to the project. Rows may be added or deleted on the form as needed. Applicants should contact the SNC if questions arise.

* Operating Costs should be allocated to the pecentage that is applicable to the grant based on your cost allocation methodology and cannot exceed 15% of your total project costs.

State of California
The Natural Resources Agency
Board of Forestry and Fire Protection

NOTICE OF DETERMINATION

To: Office of Planning and Research
State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, CA 95814

From: California Board of Forestry and Fire Protection
P.O. Box 944246
Sacramento, CA 94244-2460

Contact Person : Eric K. Huff, Assistant Executive Officer
Phone Number: 916-653-8031
Email Address: eric.huff@fire.ca.gov

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 and 21152 of the Public Resources Code.

State Clearinghouse #: SCH#2010011029

Project Title: Initial Study/Mitigated Negative Declaration for the Mountain Home Demonstration State Forest 2010 Management Plan Update

County of Project: Tulare County

Project Location: Mountain Home Demonstration State Forest, Tulare County, approximately 22 air miles northeast of the city of Porterville. Legal description: Sections 25, 26 and 34-36, Township 19 South, Range 30 East; Sections 18-20 and 28-31, Township 19 South, Range 31 East; and Sections 1, 2 and 12, Township 20 South, Range 30 East, Mount Diablo Base and Meridian.

Project Description: Revision of Management Plan for Mountain Home Demonstration State Forest, a state owned property managed by the California Department of Forestry and Fire Protection. The property is managed for a variety of benefits, including public recreation, research and demonstration of forest management techniques, watershed improvement, fisheries and wildlife.

This is to advise that the **California Board of Forestry and Fire Protection** [☒ Lead Agency ☐ Responsible Agency] has approved the above-described project on **March 11, 2010** and has made the following determinations regarding the above-described project:

1. The project [☐ will ☒ will not] have a significant effect on the environment.
2. ☐ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☒ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation Measures [☒ were ☐ were not] made a condition of the approval of the project.
4. A statement of Overriding Considerations [☐ was ☒ was not] adopted for this project.
5. Findings [☐ were ☒ were not] made pursuant to the provisions of CEQA.

This is to certify that the record of project approval is available to the General Public at:

Board of Forestry and Fire Protection
1416 9th Street, Room 1506-14
P.O. Box 944246
Sacramento, CA 94244-2460

Eric K. Huff, Assistant Executive Officer
Board of Forestry and Fire Protection

March 17, 2010
Date

Date received for filing and posting at OPR:

RECEIVED
MAR 17 2010
STATE CLEARING HOUSE

HOLD AT AN ANGLE TOWARD LIGHT TO VERIFY ARTIFICIAL WATERMARK ON FACE & BACK

63-0 9540
Ven. #701900-02
Filing Fee for Notice of Determination - Mountain Home Demo St Forest Mgmt. Plan Update / Resource Mgmt.
8RF9X004

BILL LOCKYER, TREASURER
STATE OF CALIFORNIA
SACRAMENTO

ACCOUNT - NUMBER - SERIAL
053- 548834
WARNING: THIS NUMBER BLEEDS THROUGH PINK TO THE BACK

90-1342
1211

PAY TO THE ORDER OF

Department of Fish and Game

ISSUE DATE	CHECK AMOUNT
3-16-10	$**2010.25**

DEPARTMENT OF FORESTRY & FIRE PROTECTION

By

THIS CHECK VOID ONE (1) YEAR FROM ISSUE DATE

MICR NUMBER APPEARS PINK ON THE REVERSE SIDE

⑈0053⑈ ⑆121134231⑆ 00548834⑆

CK# 053-548807

State of California—The Resources Agency
DEPARTMENT OF FISH AND GAME
2010 ENVIRONMENTAL FILING FEE CASH RECEIPT

RECEIPT# 394494

STATE CLEARING HOUSE # *(If applicable)* 2010011029

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY

LEAD AGENCY: Board of Forestry & Fire
DATE: 3-17-10

COUNTY/STATE AGENCY OF FILING: Sacramento
DOCUMENT NUMBER:

PROJECT TITLE: Mountain Home Demonstration State Forest 2010 Management.

PROJECT APPLICANT NAME: Eric K. Huff
PHONE NUMBER: (653 (916) 8031

PROJECT APPLICANT ADDRESS: P.O. Box 944246
CITY: Sacramento
STATE: CA
ZIP CODE: 94244-2460

PROJECT APPLICANT *(Check appropriate box):*

- ☐ Local Public Agency
- ☐ School District
- ☐ Other Special District
- ☒ State Agency
- ☐ Private Entity

CHECK APPLICABLE FEES:

☐	Environmental Impact Report (EIR)	$2,792.25	$
☒	Mitigated/Negative Declaration (ND)(MND)	$2,010.25	$ 2010.25
☐	Application Fee Water Diversion *(State Water Resources Control Board Only)*	$850.00	$
☐	Projects Subject to Certified Regulatory Programs (CRP)	$949.50	$
☐	County Administrative Fee	$50.00	$
☐	Project that is exempt from fees		
	☐ Notice of Exemption		
	☐ DFG No Effect Determination (Form Attached)		
☐	Other		$

PAYMENT METHOD:

☐ Cash ☐ Credit ☒ Check ☐ Other

TOTAL RECEIVED $ 2010.25

SIGNATURE: X [signature]

TITLE: Clerk

WHITE - PROJECT APPLICANT YELLOW - DFG/ASB PINK - LEAD AGENCY GOLDEN ROD - COUNTY CLERK FG 753.5a (Rev. 11/09)

Initial Study / Mitigated Negative Declaration

for the Proposed

Mountain Home Demonstration State Forest
2010 Management Plan Update

Tulare County, California

Prepared by:

The State of California
Board of Forestry and Fire Protection
The Lead Agency Pursuant to Section 21082.1 of the
California Environmental Quality Act

CAL FIRE Mountain Home Demonstration State Forest
P.O. Box 944246
Sacramento, CA 94244-2460
(916) 653-5000

March 2, 2010

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I. Mitigated Negative Declaration

Introduction and Regulatory Context

Stage of CEQA Document Development

☐ Administrative Draft. This CEQA document is in preparation by the Board of Forestry and Fire Protection (the Board).

☐ Public Document. This draft CEQA document will be filed with the Board at the State Clearinghouse and circulated for a 30-day agency and public review period. Instructions for submitting written comments are provided on page two of this document.

☒ Final CEQA Document. This Final CEQA document contains the changes made by the Department following consideration of comments received during the public and agency review period. The CEQA administrative record supporting this document is on file at the Board's Sacramento Headquarters.

Introduction

This Initial Study/Mitigated Negative Declaration (IS/MND) describes the environmental impact analysis conducted for the proposed update of the 2003 management plan for Mountain Home Demonstration State Forest (Mountain Home). This document was prepared by the Lead Agency, the Board, with assistance from California Department of Forestry and Fire Protection (CAL FIRE) staff.

Pursuant to Section 21082.1 of the California Environmental Quality Act (CEQA), the Board has reviewed and analyzed the IS/MND and declares that the statements made in this document reflect the Board's independent judgment as Lead Agency pursuant to CEQA. The Board further finds that the proposed project, which includes revised activities and mitigation measures designed to minimize environmental impacts, will not result in significant adverse effects on the environment.

Regulatory Guidance

This IS/MND has been prepared by the Board to evaluate potential environmental effects which could result following approval and implementation of the proposed update of the 2003 management plan for Mountain Home Demonstration State Forest. The proposed project is located approximately 22 miles northeast of Porterville in Tulare County, California. This document has been prepared in accordance with current CEQA Statutes (Public Resources Code [PRC] §21000 et seq.) and CEQA Guidelines (California Code of Regulations [CCR] §15000 et seq.).

An Initial Study (IS) is prepared by a lead agency to determine if a project may have a significant effect on the environment (14 CCR § 15063[a]), and thus, to determine the appropriate environmental document. In accordance with CEQA Guidelines §15070, a "public agency shall prepare … a proposed negative declaration or mitigated negative declaration … when: (a) The Initial Study shows that there is no substantial evidence … that the project may have a significant impact upon the environment, or (b) The Initial Study identifies potentially significant effects but revisions to the project plans or proposal are agreed to by the applicant and such revisions will reduce potentially significant effects to a less-than-significant level." In this circumstance, the lead agency prepares a written statement describing its reasons for concluding that the proposed project will not have a significant effect on the environment and, therefore, does not require the preparation of an Environmental Impact Report (EIR). This IS/MND conforms to these requirements and to the content requirements of CEQA Guidelines Section 15071.

Purpose of the Initial Study

Because of its statutory authority for approving CAL FIRE Demonstration State Forest management plans, the Board is the lead agency for the proposed project under CEQA. CAL FIRE has primary authority for carrying out the proposed project. The purpose of this IS/MND is to present to the Board members and the public the environmental consequences of implementing the proposed project and describe the adjustments made to the project to avoid significant environmental effects or reduce them to a less-than-significant level. This disclosure document is being made available to the public for review and comment. The IS/MND is being circulated for public review and comment for a review period of 30 days. The beginning and ending dates of the 30-day public review period will be indicated on the Notice of Intent.

If submitted prior to the close of public comment, views and comments are welcomed from reviewing agencies or any member of the public on how the proposed project may affect the environment. Written comments must be postmarked or submitted on or prior to the date the public review period will close (as indicated on the NOI) for the Board's consideration. Written comments may also be submitted via email (using the email address which appears below) but comments sent via email must also be received on or prior to the close of the 30-day public comment period. Comments should be addressed to:

George Gentry, Executive Officer
State Board of Forestry and Fire Protection
P.O. Box 944246
Sacramento, CA 94244-2460
Phone: (916) 653-8007
Email: board.public.comments@fire.ca.gov

After comments are received from the public and reviewing agencies, the Board will consider those comments and may (1) adopt the Mitigated Negative Declaration and approve the proposed project; (2) undertake additional environmental studies; or (3) abandon the project. If the project is approved, CAL FIRE will be responsible for implementation of the project.

Project Description and Environmental Setting

Project Location

Mountain Home is located on the west slopes of the southern Sierra Nevadas, in eastern Tulare County, approximately twenty-two air miles north east of Porterville. As indicated in figure 1, forest land in this area of the State is predominantly Federal lands, National Forests and National Parks. Mountain Home is situated in the drainages of the North Fork and the North Fork of the Middle Fork of the Tule River (figure 2). Mountain Home is located in Sections 25, 26 and 34-36, Township 19 South, Range 30 East; Sections 18 - 20 and 28 - 31, Township 19 South, Range 31 East and Sections 1, 2 and 12, Township 20 South, Range 30 East, Mount Diablo Base and Meridian. It ranges in elevation from 4,800 to 7,600 feet with all aspects present. The Forest comprises a total of 4,858 acres.

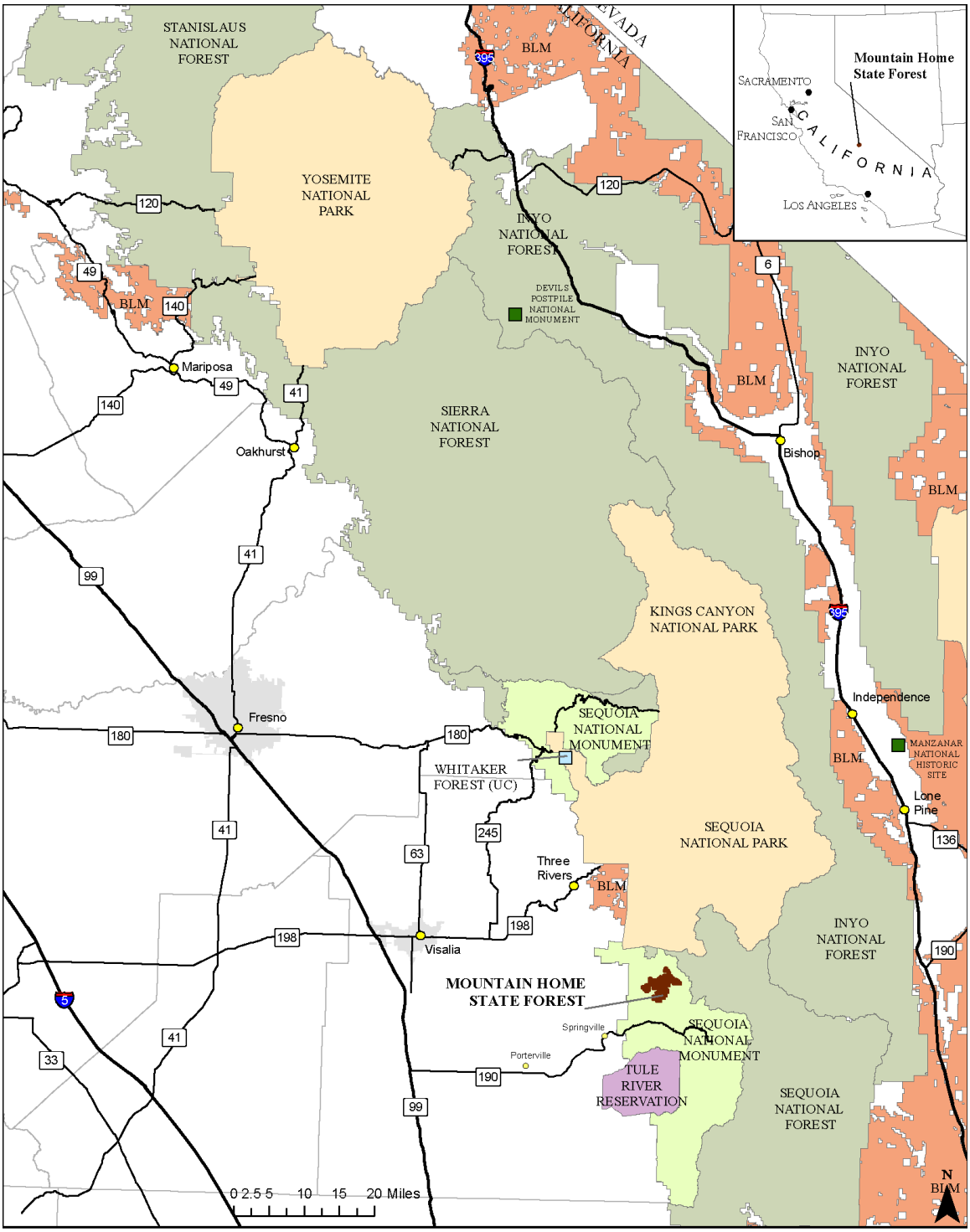

Figure 1. Location of Mountain Home Demonstration State Forest.

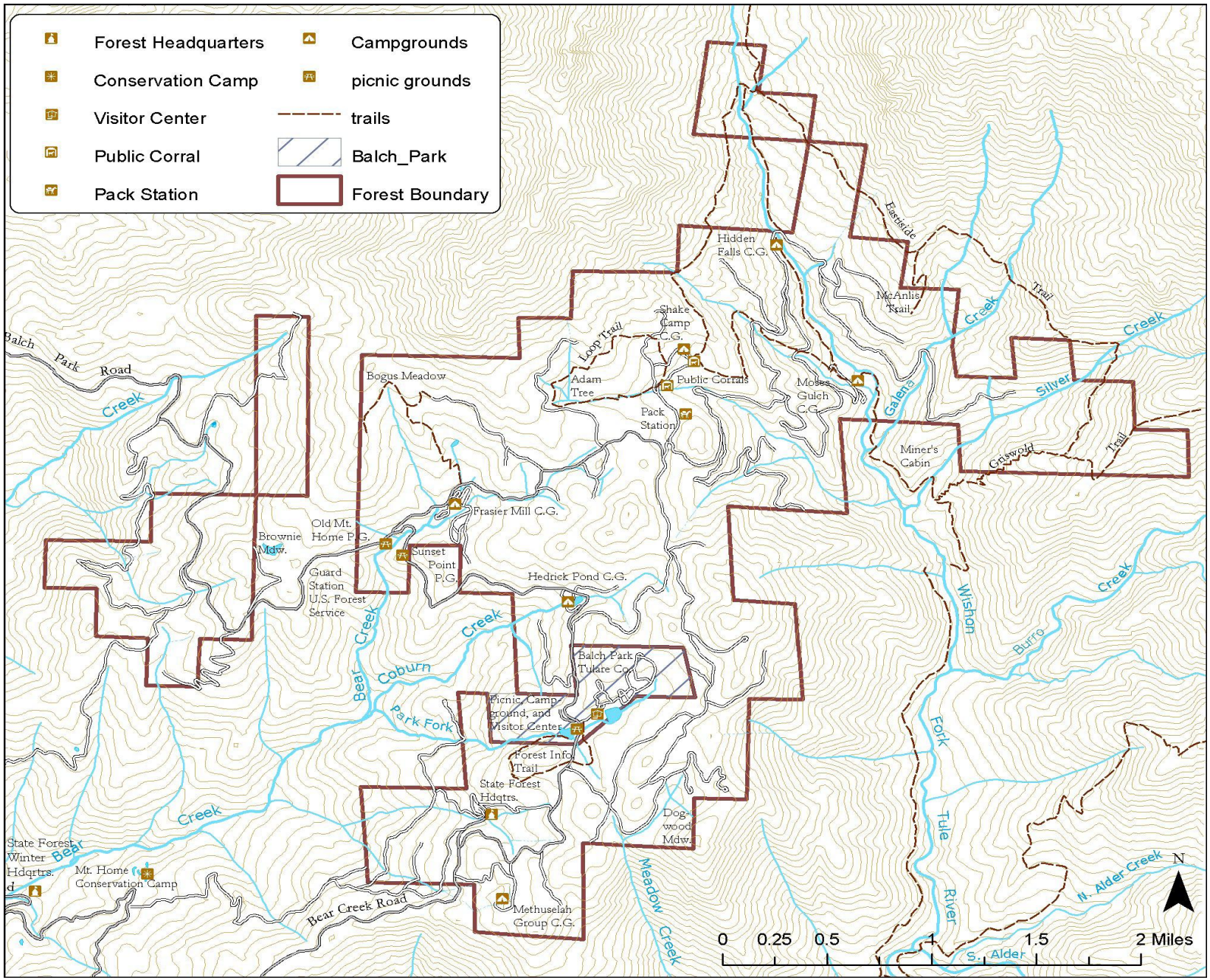

Figure 2. Mountain Home Demonstration State Forest ownership map.

Background and Need for the Project

The California Department of Forestry and Fire Protection (CAL FIRE) manages approximately 72,000 acres of Demonstration State Forests on behalf of the public. Mountain Home Demonstration State Forest, a 4,858-acre mixed conifer forest located in the southern Sierra Nevada in Tulare County, is 22 air miles northeast of Porterville, and is the third largest Demonstration State Forest.

The majority of public wildlands in California are set aside as reserves and parks to preserve rare ecosystems. Demonstration State Forests, by contrast, are public lands that by legislative mandate have a unique and distinctly different purpose from parks and wilderness areas. Demonstration State Forests are mandated by law to provide opportunities to conduct research, demonstration, and education on sustainable forestry practices. Given the often controversial role of forestry in California, the Demonstration State Forests play an important role in helping maintain California's leadership as an innovator in creating solutions to difficult and controversial forest management problems.

Mountain Home is unique among the Demonstration State Forests in that it contains old growth giant sequoia groves and individual trees. Old growth giant sequoia are protected from harvest. Recreation is the primary land use on Mountain Home.

The project consists of an update of the management plan for Mountain Home. The last management plan for Mountain Home was completed and approved by the Board in 2003. The management plan lays out the planned on-the-ground management on the Forest for the next five to ten years. It serves as a guide to Forest managers as well as a public disclosure of the management direction at Mountain Home.

Board policy states that management plans for the Demonstration State Forests shall be prepared by the Department (CAL FIRE), with appropriate public review, for approval by the Board. The Department shall present to the Board a thorough review of each existing plan at least every five years. After each review, the Board may direct the Department either to continue management under the existing plan, to prepare amendments to the plan, or to prepare a new plan for public review and Board approval. The Department shall submit the requested amendments or plan to the Board within one year after each request. The Department shall continue management under existing plans with appropriate consideration for changes in law or regulation, until amendments or new plans are approved by the Board.

Project Objectives

The primary objectives of Mountain Home management is to protect old growth giant sequoia trees, recruit replacement old growth trees from second growth, support recreation, practice sustainable forestry and conduct innovative demonstrations, experiments, and education in forest management.

The objective of the project is to facilitate meeting these Forest management objectives through an updated management plan that serves as a guide to Forest managers as well as a public disclosure of the management direction at Mountain Home.

Project Start Date

The earliest start date for the project will be in March 2010, after completion of the public review comment period and completion of the final CEQA document. Board policy however, provides that CAL FIRE continue to manage the Forest under existing plans with appropriate consideration for changes in law or regulation, until amendments or new plans are approved by the Board.

Project Description

The proposed project involves the update of the existing (2003) management plan for Mountain Home. The updated plan will incorporate new and updated information from natural resources surveys and databases, as well as new directions in management objectives and priorities.

Mountain Home is a 4,858-acres State-owned forest managed by CAL FIRE. The management plan for the Forest provides direction and guidance for the management of forest resources with an emphasis on recreation, protection of old growth giant sequoia trees (Public Resources Code 4631(e)), sustainable forestry, applied research, demonstration and education (Public Resources Code 4631(c)), and the demonstration of economical forest management (Public Resources Code 4631(d)). Mountain Home has been managed by CAL FIRE since 1946 through the implementation of a series of management plans approved by the Board.

Management activities that may be conducted under the guidance of this project include but are not limited to the following: silvicultural activities undertaken to protect old growth and candidate old growth giant sequoia trees, campground development and use, nature trail construction, road building, maintenance and improvements, culvert replacement or removal, research and demonstration projects, timber harvesting, biomass harvesting, prescribed burning, pre-commercial thinning, fire wood cutting, etc.

Environmental Setting of the Project Region

The proposed project is located in Tulare County, in the southern Sierra Nevada mixed conifer forest type. Mountain Home is approximately twenty-two air miles north east of Porterville. It is a high elevation Forest with ranges in elevation from 4,800 to 7,600 feet with all aspects present. The Forest comprises a total of 4,858 acres. A detailed description of the Forest can be found in the 2009 draft management plan (California Department of Forestry and Fire Protection 2009).

Mountain Home has a Mediterranean climate characterized by warm dry summers and cold, wet winters. Average precipitation is estimated to be 42 inches per year with the majority falling in the form of snow. With the exception of sporadic and infrequent summer thunderstorms, the typical rainy season extends from November through April. April 1 average water content of snow at the Old Enterprise Mill Snow Course, at 6,600 feet, is 15.3 inches with an average snow depth of approximately 36.9 inches. The minimum winter temperature recorded at Mountain Home is 1° F. The maximum summer temperature on record is 90° F.

Approximately two-thirds of the State Forest area is underlain by granite-granodiorite, most of which is decomposed at the surface. The remaining one-third of the area is underlain by metamorphic rocks including schists, quartzite, slate, metavolcanic rocks, lime/silicate hornfels and limestone. The main ridge between the North Fork and the North Fork of the Middle Fork of the Tule River forms the rough dividing line between these two basic parent materials, with the granitics lying to the west of the ridge and the metamorphics to the east.

Mountain Home is situated on the ridge that separates the North Fork of the Middle Fork of the Tule River (Wishon Fork) from the North Fork of the Tule River. The forest encompasses five Calwater watersheds: Rancheria, Upper North Bear, Hossack, Silver, and Burro Creeks. The North Fork of the Middle Fork of the Tule River passes through the forest for approximately 1.5 miles of its length. Tributaries to the North Fork of the Tule River, which drain out of the forest, include Rancheria, Bear, and Hossack Creeks.

Description of the Local Environment

There are two major vegetation types found on Mountain Home, mixed conifer and true fir[1]. The mixed conifer type is found at lower elevations on drier south and west facing slopes. The tree components of this type are giant sequoia (*Sequoiadendron giganteum*), ponderosa pine (*Pinus ponderosa*), sugar pine (*Pinus lambertiana*), white fir (*Abies concolor*) and incense-cedar (*Calocedrus decurrens*). Introduced Douglas-fir (*Pseudotsuga menziesii*) and some hybrid Jeffrey-Coulter pine occur in limited areas

[1] These vegetation categories are part of the MHDSF vegetation classification system. The mixed conifer and true fir vegetation classes are similar to the CWHR Sierran Mixed Conifer and White Fir types, respectively (Mayer and Laudenslayer 1988).

throughout the lower elevations of the forest. At the upper elevations Jeffrey pine (*Pinus jeffreyi*) replaces ponderosa and Shasta red fir (*Abies magnifica* var. *shastensis*) mixes with white fir. The major component of the mixed conifer type is white fir with second growth giant sequoia being a distant second.

The true fir type is found at the higher elevations particularly in the area of the old Enterprise Mill site. This type is characterized by almost pure even aged stands of white and red fir. Other species found in association with the true firs are sugar pine, Jeffrey pine and giant sequoia.

Small amounts of hardwoods found in association with these types include black oak (*Quercus kelloggii*), canyon live oak (*Quercus chrysolepsis*), interior live oak (*Quercus wislizenii*), white alder (*Alnus rhombifolia*), and Pacific dogwood (*Cornus nuttallii*).

Major components of the understory vegetation include mountain whitethorn (*Ceanothus cordulatus*), bearclover (*Chamaebatia foliolosa*), gooseberry (*Ribes roezlii*), currant (*Ribes nevadense*), California hazelnut (*Corylus cornuta* var. *californica*), bush chinquapin (*Castanopsis sempervirens*), dogwood (*Cornus nuttallii*), deerbrush (*Ceanothus integerrimus*), manzanita (*Arctostaphylos* spp.), bracken fern (*Pteridium aquilinum*), lotus (*Lotus* spp.), lupine (*Lupinus*. Spp.), snowberry (*Symphoricarpos albus*) and littleleaf ceanothus (*Ceanothus parvifolius*).

Mountain Home is famous for its old growth giant sequoia trees. Old growth giant sequoia greater than 40 inches in diameter occur on approximately 56 percent of the total acreage of the forest. Recent inventory data estimate the total number of old growth giant sequoia trees at about 4,000.

Current Land Use and Previous Impacts

Mountain Home is surrounded on the north, east and south by the southern section of the Giant Sequoia National Monument. The 328,000 acre Monument was created by President Clinton on April 15, 2000. It is administered by the United States Forest Service as part of the Sequoia National Forest and includes 38 of the 39 Giant Sequoia groves that are located in the Sequoia National Forest, about half of the sequoia groves currently in existence. The management objectives for the Monument focus on the protection and restoration of giant sequoia trees.

The Tule River Indian Reservation south of Mountain Home is managed as working forest land. Private ownerships on the west side of the Forest are managed for agriculture and forestry. Mountain Home's mandate is a working forest emphasizing giant sequoia protection and restoration, recreation, sustainable forestry, research and demonstration. These land uses have remained unchanged since the Forest was acquired by the State in 1946.

Mountain Home is zoned by the County as Timberland Production Zone (TPZ). Under TPZ zoning, the land is devoted to and used for growing and harvesting timber and compatible uses. Compatible use is defined as any use that does not significantly detract from the use of the land for, or inhibit, growing and harvesting timber. Compatible uses include watershed management, fish and wildlife habitat management, hunting, fishing, and grazing (Government Code §51104(h)). The Forest Practice Rules (14CCR 898) state that "On TPZ lands, the harvesting per se of trees shall not be presumed to have a significant adverse impact on the environment."

Young growth giant sequoia is present in dense stands ranging in age from 1-110 years. The origin of these stands can be traced back to historical site disturbances, mainly logging. Many of these stands average 100 years in age corresponding to early logging around 1900.

Conclusion of the Mitigated Negative Declaration

Environmental Permits

No environmental permits are required to approve this management plan. Subsequent projects carried out to implement this management plan may require the following environmental permits and CAL FIRE may be required to comply with the following State regulations:

1. CAL FIRE Timber Harvest Plan and Option A Plan.
2. Central Valley Regional Water Quality Control Board National Pollution Discharge Elimination System (NPDES) permit.
3. Department of Fish and Game lake and streambed alteration agreement.
4. Tulare County Air Quality burning permits.
5. Tulare County Public Health campground facilities permits.
6. California Department of Pesticide Regulation.

Mitigation Measures

This Initial Study identified potentially significant environmental effects that could result from the proposed project; however, the Board revised its project plans and has developed mitigation measures which will eliminate impact or reduce environmental impacts to a less than significant level. The following mitigation measures will be implemented by the Board to avoid or minimize environmental impacts associated with biological resources and the storage, handling and use of hazardous materials. Implementation of these mitigation measures will reduce the environmental impacts of the proposed project to a less than significant level.

Mitigation Measure #1: Utilize a wide range of management tools which will continue to maintain a landscape that is varied and has a mixture of various wildlife habitats. Mountain Home, as a multiple aged forest, including old growth giant sequoia, provides for a more biologically diverse habitat than is found in a predominantly young managed forest. The use of a variety of silvicultural systems will improve forest habitat by developing and maintaining a variety of crown levels, stand densities, and small openings in the forest. A management strategy of maintaining a variety of forest types and habitats provides a robust ecosystem that is resilient to disturbance and can mitigate impacts to less than significant.

Mitigation Measure #2: Maintain, restore, and enhance the occurrence of special habitat elements and unique habitats to promote species diversity and habitat quality. It is anticipated that potential project impacts will be less than significant on species identified as a candidate, sensitive, or special status species.

Mitigation Measure #3: Individual projects conducted under the guidance of this management plan will require a separate biological assessment based upon site-specific conditions. If during the project assessment, survey or project layout, species identified as candidate, sensitive, or special status or their habitats are identified, the management plan specifies that protection measures will be incorporated into the project. Protection measures will be developed in consultation with appropriate State or Federal wildlife agencies.

Mitigation Measure #4: Incorporate protection measures for all riparian areas or other sensitive natural communities, as set forth in the Forest Practice Rules.

Mitigation Measure #5: Protect all natural wetlands, springs and ponds on the Forest, as set forth in the Forest Practice Rules. Plan for additional pond construction where desirable.

Mitigation Measure #6: Consistent with the Forest Practice Rules, retain sufficient amounts of overstory and understory vegetation within watercourse protection zones so that water temperatures will not increase, and to provide other biological benefits. Allow for the natural recruitment of large woody debris to the stream channel to improve or maintain in-stream habitat quality and stream ecosystem function.

Avoid deposition of any substances in streams or ponds that will degrade fish habitat. Design road crossings of fish-bearing streams to allow fish passage.

Mitigation Measure #7: Design forest management activities based on criteria that include horizontal and vertical forest structure, vegetation density, edge effect, corridor size, and biological diversity, in order to allow unrestricted movement of wildlife species.

Mitigation Measure #8: To ensure that all material is properly used, stored, and transported, Material Safety Data Sheets (MSDS), material labels, and any additional handling and emergency instruction of the materials are kept on file at the Mountain Home Demonstration State Forest Office.

Mitigation Measure #9: Any state employee handling these materials will be made aware of the potential hazards, given proper training and instruction, and also made aware of the location of the MSDS, and any other documentation for the material.

Mitigation Measure #10: All contractors used in the application or use of these hazardous materials shall have the appropriate licenses and be able to read and understand the MSDS, labels, appropriate recommendations, and application instructions.

Mitigation Measure #11: The storage of potentially hazardous materials on Mountain Home is in accordance to the MSDS and any buildings that are used for storage will display appropriate placards.

Summary of Findings

This IS/MND has been prepared to assess the project's potential effects on the environment and an appraisal of the significance of those effects. Based on this IS/MND, it has been determined that the proposed project will not have any significant effects on the environment after implementation of mitigation measures. This conclusion is supported by the following findings:

1. The proposed project will have no effect related to agricultural resources, land use and planning, mineral resources, population and housing, and public services.

2. The proposed project will have a less than significant impact on aesthetics, air quality, cultural resources, geology and soils, hydrology and water quality, noise, recreation, transportation and traffic, and utilities and service systems.

3. Mitigation is required to reduce potentially significant impacts related to biological resources and hazards and hazardous materials.

The Initial Study/Environmental Checklist included in this document discusses the results of resource-specific environmental impact analyses which were conducted by the Board. This Initial Study revealed that potentially significant environmental effects could result from the proposed project; however, the Board revised its project plans and has developed mitigation measures which will eliminate impacts or reduce environmental impacts to a less than significant level. The Board has found, in consideration of the entire record, that there is no substantial evidence that the proposed project as currently revised and mitigated would result in a significant effect upon the environment. The IS/MND is therefore the appropriate document for CEQA compliance.

II. Initial Study

Environmental Checklist

PROJECT INFORMATION	
1. Project Title:	Mountain Home Demonstration State Forest 2010 management plan update
2. Lead Agency Name:	California Board of Forestry and Fire Protection
3. Contact Person and Phone Number:	George Gentry, Board Executive Officer (916) 653-8007
4. Project Location:	Mountain Home Demonstration State Forest, Tulare County
5. Project Sponsor's Name and Address:	California Department of Forestry and Fire Protection (CAL FIRE), Mountain Home Demonstration State Forest PO Box 517 Springville, California 93265
6. General Plan Designation:	Public Land
7. Zoning:	TPZ - Timberland Production
8. Description of Project: see pages 5-6 of this document	
9. Surrounding Land Uses and Setting: see pages 6-7 of this document	
10. Other public agencies whose approval may be required: see page 7 of this document	
ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:	
The environmental factors checked below would be potentially affected by this project involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.	

☐	Aesthetics	☐	Agriculture Resources	☐	Air Quality
☐	Biological Resources	☐	Cultural Resources	☐	Geology / Soils
☐	Hazards & Hazardous Materials	☐	Hydrology / Water Quality	☐	Land Use / Planning
☐	Mineral Resources	☐	Noise	☐	Population / Housing
☐	Public Services	☐	Recreation	☐	Transportation / Traffic
☐	Utilities / Service Systems	☐	Mandatory Findings of Significance	☒	None With Mitigation

Determination

DETERMINATION

On the basis of this initial evaluation:

I find that the proposed project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** would be prepared. ☐

I find that although the proposed project **COULD** have a significant effect on the environment, there **WOULD NOT** be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **MITIGATED NEGATIVE DECLARATION** would be prepared. ☐

I find that the proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required. ☐

I find that the proposed project **MAY** have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed. ☐

I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier **EIR** or **NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier **EIR** or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required. ☐

George Gentry
Executive Officer to the California Board of Forestry

Date

Analysis of Potential Environmental Impacts

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. Aesthetics. Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Discussion

Mountain Home has been subject to timber harvest and other associated activities since the late 1800's. In 1946, the State of California acquired the forest in an effort to conserve the giant sequoias that John Muir called "the finest in the Sierras". One of the stated management goals for the forest is to, "Protect old growth giant sequoia from fire, cutting, and logging damage…" The result has been the protection of more than 4,000 old-growth giant sequoias and sustainable management of the mixed conifer forest, including young growth giant sequoia, ponderosa and sugar pine, white and red fir, and incense cedar, that surrounds them.

Timber harvesting and prescribed burning are the management activities most likely to effect aesthetics. Timber harvesting operations at Mountain Home are subject to the restrictions of the following goal stated in the forest management plan: "Manage the forest to maintain an aesthetically pleasing forest environment for the recreational visitor. Harvest timber strategically to increase the visibility of old growth giant sequoias. Improve aesthetics in high use areas and along roads by controlling the density of leave stands, treating slash promptly, and promoting rapid regeneration."

The long term objectives identified in the Mountain Home management plan include conserving old growth giant sequoias and oaks, maintaining young growth trees in a safe and healthy condition, and protecting aesthetics into the future.

Prior to approval, timber harvest plans go through an interdisciplinary agency review and public comment period (THP review). The review process ensures that potential visual impacts which may result from timber harvest activities are minimized. Furthermore, visual effects are addressed by Title 14 of the California Code of Regulations, Forest Practice Rules (FPR), under "Board of Forestry Technical Rule Addendum No. 2, Appendix Technical Rule Addendum No. 2, Visual Resources". The visual assessment area is generally the harvesting area that is readily visible to a significant number of people who are no further than three miles from the timber

operations. Individual projects conducted under the guidance of this management plan will have additional visual assessments done utilizing site specific information.

The past management at Mountain Home has resulted in a landscape that has a mixture of different sizes and densities of trees. The planned management of Mountain Home and the utilization of both uneven-aged and even-aged logging methods will result in the continuation of the varied appearance of the forested landscape.

The principal road system is well developed, and no additional road clearing or building is proposed. Other projects such as campground and infrastructure development, may take place. Campgrounds and infrastructure facilities on MHDSF are designed to blend in with the landscape. Impacts on aesthetics from campground or infrastructure development are not expected.

Research and demonstration projects generally will have the same characteristics as timber harvest plans, discussed above. Research projects with features that could impact aesthetics, such as weather instruments, will address potential impacts to aesthetics on a project basis.

a) Would the project have a substantial adverse effect on a scenic vista?

Less than significant. Mountain Home utilizes silvicultural methods that will maintain the current natural appearance of the forested landscape. Mountain Home has several scenic vistas that are accessible to the public. Scenic overlooks of the foothills and valley can be found at Sunset Point, while brief glimpses of the Wishon Fork of the Tule River canyon can be seen from the Vantage Point Road.

Key scenic locations that are accessible to the public at Mountain Home include Sunset Point, Vantage Point Road, and Shake Camp (with views of Moses Mountain and Maggie Peak).

High use areas on the forest include the five multiple user camps, Frasier Mill, Hedrick Pond, Hidden Falls, Shake Camp, and Moses Gulch, as well as the Methuselah group campground. Picnic grounds are located at old Mountain Home and Sunset Point. There is also a pack station located near Shake Camp. Interpretive hiking trails are available at Balch Park and by the corrals. The trail system accesses various points throughout the forest, as well as leading into the adjacent Balch Park, Golden Trout Wilderness Area, the Sequoia National Forest, and Sequoia National Park. Between 40,000 and 60,000 people visit the forest each year.

Portions of Mountain Home are visible from Bear Creek Road between the south forest entrance and Camp Lena Road, and from several locations along the Balch Park Road, from the north entrance to Camp Lena Road. Brochures for a self-guided motor tour of the forest are available at the forest headquarters.

The appearance of the lands surrounding the forest varies, depending upon the landowners' objectives. The 160-acre Balch Park, owned and managed by the Tulare County Parks Department, is located adjacent to the southern end of the forest. The north, east, south, and most of the west side of Mountain Home are managed by the Giant Sequoia National Monument and Sequoia National Forest. Mountain Home's utilization of both uneven-aged and even-aged management will maintain the current varied appearance of the forested landscape.

The planned management activities described within the project are consistent with best management practices for maintaining and enhancing scenic vistas. No significant impact on any scenic vistas is anticipated.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Less than significant. There are no designated state scenic highways in the project area or within the assessment area.

Stated management goals for the forest include conserving old growth giant sequoias, and protecting them from damage when near-by trees are harvested. Management of giant sequoias for commercial timber is restricted to second-growth or younger giant sequoia, and/or trees that have been planted, and that are outside of the naturally-occurring groves. Objectives for harvesting fir, pine, and incense cedar within giant sequoia groves include, “improve vistas of individual old growth giant sequoia” and , “enhance the aesthetic appearance of the forest for recreational visitors.” Retention of oaks on the forest is also identified as a management goal.

The 22 prehistoric and 14 historic sites recorded at Mountain Home attest to the long period of human occupancy there. The prehistoric sites consist of bedrock mortars and basins (these include the “Indian bathtubs”), lithic scatters, and combinations of the three. An interpretive exhibit at Sunset Point leads visitors through an archeological site with evidence of occupation dating back 8,000 years. Historic sites consist mainly of early sawmill remains and trees and stumps with historic markings.

These sites are extremely important forest resources. All known sites are protected during management activities, including road construction and logging. Please see Appendix A of the Mountain Home Management Plan for further discussion of mitigation measures designed to protect archeological and historical resources on the forest.

The planned management activities described within the project are not intensive and will have a less than significant effect on scenic resources.

c) Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

Less than significant. Mountain Home has been subject to timber harvest and associated activities by the State of California since 1946. The past management at Mountain Home has resulted in a landscape that has a mixture of different sizes and densities of trees in the forest. The principal road system is well developed, and no additional road clearing or building is planned. The planned management of Mountain Home and the utilization of both uneven-aged and even-aged logging systems will result in the continuation of the varied appearance of the forested landscape. This appearance is consistent with the surrounding land use.

Portions of the forest are visible from Camp Nelson, which is located about seven miles to the southeast. Any future harvesting conducted on this side of the forest would utilize a selective logging method, and changes in the visual appearance of the stand are not expected to be visible from Camp Nelson.

The appearance of Mountain Home will not be substantially altered, nor will the scenic resources be substantially impacted by this project.

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

No impact. There are no planned activities that would create a light source or create any glare.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II. Agricultural Resources.				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997, as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland.				
Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒
c) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	☐	☐	☐	☒

Discussion

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No impact. Mountain Home is not farmland.

b) Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

No impact. Mountain Home is zoned as Timberland Production (TPZ) and does not have a Williamson Act contract.

c) Would the project involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?

No impact. Mountain Home is not farmland.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. Air Quality.				
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the following determinations.				
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Discussion

Activities on Mountain Home that may have an impact on air quality include open burning, road construction and maintenance, and the generation of dust and other pollutants by vehicular traffic. Thes impacts are expected to be insignificant.

Prescribed burning is used by many agencies managing giant sequoia stands to stimulate reproduction and reduce fuel loads. On the State Forest, prescribed burning (as well as timber harvesting) provide soil disturbance needed for giant sequoia reproduction. Prescribed burning also serves to improve aesthetics and reduce the fire hazard by cleaning up slash from harvested areas, as well as facilitating tree planting.

Road construction and maintenance is expected to conbtinue to be minor projects on the Forest, which is fully roaded. Constrcution and maintenance will be scheduled when weather conditions minimize the possibility of air quality impacts

Vehicular traffic in general has the potential to generate dust and other pollutants. Mountain Home is a destination rather than a way point for travelers on their way elsewhere. Almost all traffic consists of campers who travel to a camp site and then park their vehicles for the duration of their stay. Dust and pollutants from vehicle traffic, including off highway vehicle (OHV) recreation, is insignificant at Mountain Home.

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

Less than significant. Project burns conducted on Mountain Home that are greater than 10 acres in size, or have expected emissions greater than one ton, are required to have an approved Smoke Management Plan (SMP). Upon approval by Tulare County Air Quality Management District (AQMD) of the SMP, Mountain Home shall obtain an open burning permit from AQMD. Additionally burning shall only be conducted on "Burn Days" designated by Tulare County AQMD, unless a variance has been approved for specific burning criteria. Adherence to the SMP, burn permit and burning only on burn days unless a variance has been granted reduces any potential impact to air quality to less than significant and is in compliance with the State Implementation Plan for air quality.

Use of the dust abatement activities described within Mountain Home's road management plan during hauling, road construction and maintenance effectively controls dust generation from Mountain Home roads.

Activities proposed in the Mountain Home management plan are not expected to cause increased emissions of ozone or greenhouse gases.

b) Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less than significant. Tulare County does not approve "Burn Days" if open burning has the potential to decrease air quality to a level that would violate air quality standards. Adherence to the SMP, burn permit, and permissive burning only on burn days unless a variance is granted, reduces any potential impact to air quality to less than significant and is in compliance with the State Implementation Plan for air quality.

c) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Less than significant. Tulare County does not approve "Burn Days" if open burning has the potential to decrease air quality to a level that would violate air quality standards. Adherence to the SMP, burn permit, and burning only on permissive burn days unless a variance is granted, reduces any potential impact to air quality to less than significant and is in compliance with the State Implementation Plan for air quality.

d) Would the project expose sensitive receptors to substantial pollutant concentrations?

Less than significant. Mountain Home is located approximately 22 miles northeast of the community of Porterville, 12 miles northeast of Springville and seven miles northwest of Camp Nelson. Smoke impacts to these communities are addressed in the SMPs. Smoke impacts to these communities are minimized and adequate smoke dispersal is obtained by the adherence to the SMP, burn permit, and permissive burning only on permissive burn days unless a variance is granted.

e) Would the project create objectionable odors affecting a substantial number of people?

Less than significant. Mountain Home is located approximately 22 miles northeast of the community of Porterville, 12 miles northeast of Springville and seven miles northwest of Camp Nelson. Adequate smoke dispersal and smoke impacts to these communities are minimized by the adherence to the SMP, burn permit, and burning only on burn days unless a variance is granted.

Mountain Home uses chemicals for dust abatement on Mountain Home roads. The chemicals

that have been used in the past have been resins or hygroscopic salts. These chemicals have a slight or no odor. The curing time for these chemicals is one to two days depending on weather and any odor dissipates once the chemical has cured.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. Biological Resources. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒
g) Contribute to climate change and greenhouse gas emissions?	☐	☐	☐	☒

Discussion

Timber harvest activities on the State Forest could adversely impact biological resources, but such impacts can be avoided or reduced to less than significant impacts through mitigations. Some impacts of timber harvest activities are beneficial and enhance biological resources. The following mitigations will be followed to ensure that any impacts will be less than significant:

1. Utilize a wide range of management tools which will continue to maintain a landscape that is varied and has a mixture of various wildlife habitats. Mountain Home, as a multiple aged forest, including old growth giant sequoia, provides for a more biologically diverse habitat than is found in a predominantly young managed forest. The use of a variety of silvicultural systems will improve forest habitat by developing and maintaining a variety of crown levels, stand densities, and small openings in the forest. A

management strategy of maintaining a variety of forest types and habitats provides a robust ecosystem that is resilient to disturbance and can mitigate impacts to less than significant.

2. Maintain, restore, and enhance the occurrence of special habitat elements and unique habitats to promote species diversity and habitat quality. It is anticipated that potential project impacts will be less than significant on species identified as a candidate, sensitive, or special status species.

3. Individual projects conducted under the guidance of this management plan will require a separate biological assessment based upon site-specific conditions. If during the project assessment, survey or project layout, species identified as candidate, sensitive, or special status or their habitats are identified, the management plan specifies that protection measures will be incorporated into the project. Protection measures will be developed in consultation with appropriate State or Federal wildlife agencies.

4. Incorporate protection measures for all riparian areas or other sensitive natural communities. Protect all natural wetlands, springs and ponds on the Forest.

5. Plan for additional pond construction where desirable.

6. Retain sufficient amounts of overstory and understory vegetation within watercourse protection zones so that water temperatures will not increase, and to provide other biological benefits. Allow for the natural recruitment of large woody debris to the stream channel to improve or maintain in-stream habitat quality and stream ecosystem function. Avoid deposition of any substances in streams or ponds that will degrade fish habitat. Design road crossings of fish-bearing streams to allow fish passage.

7. Design forest management activities based on criteria that include horizontal and vertical forest structure, vegetation density, edge effect, corridor size, and biological diversity, in order to allow unrestricted movement of wildlife species.

Management Guidelines

MHDSF supports a variety of wildlife and their associated habitats. The major California Wildlife Habitat Relationship (WHR) System habitat types on MHDSF are Sierran mixed conifer and white fir. Rock, brush or meadows cover approximately 0.5 percent of the total land base. We recognize the importance of these biological resources and work to maintain, restore, and enhance the occurrence of special habitat elements and unique habitats to promote species diversity and habitat quality. Management activities undertaken at MHDSF to achieve beneficial habitat enhancements include:

1. Minimize the number of temporary watercourse crossings.

2. Dredge Hedrick and Upper Balch Pond as needed to improve water depth, clarity, and oxygen content.

3. Retain oaks that produce quality mast.

4. Native grasses will be planted on landings and skid trails planned for re-use to provide an additional food source for wildlife.

5. Roads not needed for management access will be closed in certain areas to reduce wildlife disturbance.

6. Retain or enhance desirable brush species in the understory.

7. Enlarge meadows by removing encroaching trees and other vegetation.

8. Retain snags and down wood material as allowed by the Forest Practice Rules. Attempt to maintain a minimum of three snags and three dead and down logs per acre in recently harvested areas.
9. Protect and restore riparian zones.

10. Protect sensitive fauna and flora known to occur on the Forest.

11. As far as possible, utilize the existing road system thereby avoiding the need for new road construction.

Wildlife habitat enhancement opportunities are identified during the planning and implementation of timber sales, demonstration and education activities, and recreational facilities. We will incorporate control or eradication of exotic plant species into management activities, as opportunities are identified.

Several management goals of MHDSF describe the need to maintain the widest possible diversity of managed forest stands in different successional stages, maintain or increase functional wildlife habitat, and provide research and demonstration opportunities for various biological resources. One of the goals of MHDSF is to balance sustained timber production with the long term biological productivity of the land and protection of public trust resources. The forest management program under the guidance of this plan is expected to produce a moderate perpetually sustainable harvest level. Because approximately 40 percent of the current standing inventory by volume is protected old growth giant sequoia, the need to maintain the widest possible range of successional stages for research, and the need to maintain an attractive recreation destination, it follows that timber harvest rates will be lower than that of most comparable managed timberlands.

The planned sustainable harvest level is based on the long term sustainability analysis in the MHDSF Option A plan (California Department of Forestry and Fire Protection 2009). The long-term sustained yield (LTSY) is 3.8 million board feet per year (784 board feet per acre per year). Current annual growth is 900 board feet per acre per year. The corresponding planned first decade sustainable harvest level is 3.0 million board feet per year (equivalent to an annual growth rate of 621 board feet per acre per year). This constitutes a harvest intensity of 1.1 percent of inventory. The potential unrestricted LTSY that can be realized if MHDSF were to be managed for optimal sustainable timber production, while still protecting old growth giant sequoia trees, is 5.8 – 6.7 million board feet per year, depending on the silvicultural methods used. Evidence of the sustainability of harvest levels on the Forest are supported by monitoring data. On average since 1950 approximately three million board feet have been harvested annually. During that time, growing stock of living biomass has increased by more than 30 percent.

Planned harvests will be designed to increase stand growth and productivity by implementing optimal stocking and spacing configurations in individual stands. The annual harvest is less than the LTSY due to the constraints on forest management activities imposed by other forest values as described above. In addition to the constraints placed on the calculation of the long term sustained yield in the harvest schedule, there are also discretionary commitments to planned management practices for non-timber resources. These commitments are in large part discretionary management practices which are necessary to maintain a healthy managed forest ecosystem and meet our recreation mandate. They are also necessary to avoid foreclosing on future management options. A goal of MHDSF is to have an active research program, which in turn depends on a diverse mix of forest structures, from early to late seral.

Watercourses will be provided protection measures that will meet or exceed the Forest Practice Rules. The buffer zones will assist in achieving the goals of MHDSF by providing filter strips for sediment and migration corridors for wildlife.

MHDSF staff individually mark all harvest or leave trees. MHDSF maintains a marking guide to assist personnel in the marking of timber for timber sales. This management measure ensures that all trees will be evaluated for the presence of nesting structures, potential snag and LWD recruitment, and the existence of any other special habitat elements. It is also CAL FIRE policy that all harvest trees or leave trees are to be marked.

As funding allows, MHDSF plans to continue to conduct various wildlife inventory studies to improve our knowledge of wildlife species habitat use and improve the detection of rare, threatened, or endangered

species. All detections of rare, threatened, or endangered species will be documented and assessed to determine if these biological resources are being impacted by any projects conducted under the guidance of this Management Plan.

Initial Biological Scoping

The tools used to identify potentially occurring sensitive plant communities, or sensitive wildlife or plant species and their associated habitats within the vicinity of Mountain Home Demonstration State Forest (MHDSF) includes the California Natural Diversity Database (CNDDB), USFWS species lists, the California Native Plant Society database, the 2003 Mountain Home Management Plan species list, the California Wildlife Habitat Relationships System (CWHR) and the USFS Sierra National Forest biological resources database. A nine quadrangle query of the CNDDB was conducted which included the Camp Wishon 7.5 minute quad and the surrounding eight quads.

Appendix 1 identifies species that may occur at MHDSF, their listing status, habitat type, and whether they have the potential to occur at MHDSF. A detailed discussion of species in Appendix 1 that are formally listed or candidate listed and known to occur on MHDSF is provided below. It is the intent of MHDSF to avoid potential significant impacts by developing biological resource management strategies that are compatible with other management strategies identified for recreation and sustainable forestry.

Wildlife Species of Concern

A nine quad search of processed CNDDB data centered on the Camp Wishon quad identified 3 bird, 6 mammal, 1 reptile, 2 amphibian, 2 fish and 3 insect species of concern. These include Sierra Madre (or Southern Mountain) yellow-legged frog *(Rana. muscosa*)(Federal candidate in the southern Sierra Nevada), Foothill yellow-legged frog *(Rana boylii*)(CDFG Species of Special Concern), western pond turtle *(Actinemys marmorata)(*CDFG Species of Special Concern) and Pacific fisher *(Martes pennanti)*(State candidate threatened).

Other wildlife species of concern noted on the 9 quad CNDDB search include: Little Kern golden trout *(Oncorhynchus mykiss white)*(Federal threatened), Black Swift *(Cypseloides niger)*(CDFG Species of Special Concern), Western mastiff bat *(Eumops perotis californicus)*(CDFG Species of Special Concern), palid bat *(Antrozous pallidus)*(CDFG Species of Special Concern), California wolverine *(Gulo gulo)*(State threatened), Sierra Nevada red fox *(Vulpes vulpes necator)*(State threatened). The American badger *(Taxidea taxus)*(CDFG Species of Special Concern) while not noted on the CNDDB query is expected to occur per the CWHR System (species life history note and distribution map).

The following is a discussion of the life history requirements and potential protection measures for species that are formally/candidate listed and known to occur occur or potentially could occur on the Forest. If, during implementation of individual projects such as timber harvest plans, other species than those discussed here are encountered, determination of specific habitat needs and protection measures on the Forest will be made in consultation with the Department of Fish and Game biologists.

California Spotted Owl:

The NDDB revealed the presence of two California spotted owl territories within the biological assessment area. The records indicate that the sightings were made in 1991 and 1992. Surveys conducted at MHDSF in 2003 yielded five spotted owl areas. Two of the sightings were in the biological assessment area within the Upper North Bear Creek watershed. The remaining occurrences were in the Rancheria Creek and Silver Creek watersheds and are over two miles from the project area outside of the biological assessment area. Only one of the Upper North Bear Creek occurrences is located closer than 1 mile of the project area. Carlson (2006) noted California spotted owls in the vicinity of Deer Ridge and Long Meadow on Federal land adjacent to MHDSF.

Life history and habitat requirements: California spotted owls are an uncommon, permanent resident in suitable habitat. In this part of the Sierra Nevada it resides in dense, old-growth, multi-layered stands of mixed conifer, and oak-conifer habitats. This species requires mature forest stands with large trees and snags. It is very sensitive to habitat destruction and fragmentation.

The owl's breeding range extends west from the Cascades through the North Coast ranges, the Sierra Nevada, and in more localized areas of the Transverse and Peninsular Ranges. It may move downslope in winter along the eastern and western slopes of the Sierra Nevada.

The species breeds from early March through June. It produces one brood per year, with a clutch size of 1 to 4, usually 2. Young owls may not be sexually mature for 3 years. A pair may use the same breeding site for 5-10 years but may not breed each year. The species usually nests in tree or snag cavities, or in broken tops of large trees. Less frequently it will nest in large mistletoe clumps, abandoned raptor or raven nests, in caves or crevices, on cliffs or on theground. Mature, multi-layered forest stands are required for breeding. Nests are generally located 30 to 180 feet above the ground. It requires blocks of 100-600 acres of mature forest with permanent water and suitable nesting trees and snags. Tends to prefer narrow, steep-sided drainages with north aspects.

Protection measures: in the event this species is observed at MHDSF, Department of Fish and Game protection measures will be implemented for this species where it occurs.

Northern Goshawk:

Northern Goshawks breed in the North Coast Ranges, throughout the Sierra Nevada, Klamath, Cascade, and Warner mountains, and possibly in the San Jacinto, San Bernardino, and White Mountains. Northern Goshawks initiate breeding by mid-June in northern California. Nest construction can begin as early as two months before egg laying. Nests are constructed and many pairs will have two to four alternate nest areas within their home range. One nest may be used in sequential years, but often the pair switches to an alternate nest. The young fledge within 45 days and begin to hunt within 50 days. Only one brood per season is produced. After fledgling, the family group stays together and remains in the general vicinity of the nesting territory. This post-fledging area tends to be larger than the nesting territory. The diet of Goshawks consists mostly of birds (from robin to grouse in size), though small mammals such as ground and tree squirrels are also taken.

Throughout its range, the Northern Goshawk forages in diverse habitat, which can vary from open sagebrush to dense forests. However, in California mature and old growth forest with dbh greater than 20 inches (52 cm) and canopy closure greater 40 percent was used for foraging, and open habitats such as meadows and seedling or sapling stands were avoided. Carlson (2006) noted two Northern Goshawk nest sites on Mountain Home Demonstration State Forest in the vicinity of Hedrick Pond and within Section 34.

Department of Fish and Game protection measures for this species (California Department of Fish and Game 2009) will be implemented for this species where it occurs.

Golden Eagle:

Golden Eagles occur throughout California except in the Central Valley. Nesting by Golden Eagles typically occurs on cliffs or large trees in rugged open areas such as canyons and escarpments. Foraging occurs in open terrain such as grasslands, deserts, sage-juniper flats, and savannas, early successional stages of forest and shrub habitats, desert edges, farms, or ranches. Golden Eagles hunt over large open areas and feed on a variety of lagomorphs, other mammals, birds, reptiles, and occasionally carrion.

Although no cliffs occur on MHDSF, Golden Eagles could nest in older conifer and mixed conifer stands. Should the species occur on the State Forest, consultation with Federal and State wildlife agencies concerning appropriate protections would be initiated.

Pacific Fisher:

Pacific Fishers exhibit a discontinuous distribution in Washington, Oregon, and California from the more continuous populations of Canada and the eastern United States. Observations compiled between 1961 and 1982 show fishers occurring in the northwestern portion of the state and throughout the Sierra Nevada Mountains. Recent survey information indicates that the current distribution of fisher in California

is now smaller with a gap between the northwestern population and the Sierra Nevada population (Zielinski et al. 1995). Currently, the primary threat to the Pacific fisher is the reduction and fragmentation of late-successional forests, and the associated loss of habitat components necessary for resting and denning.

Breeding, resting, and foraging habitat for Pacific fisher usually consists of old-growth or late successional coniferous forests with greater than 50 percent canopy closure. Denning and resting occur in live trees with cavities, snags, downed logs, and a variety of other cavities. Young are born between February and May. In northern California, natal and maternal dens have been found in medium to large (21 to 58 inches dbh) live trees and snags, and in a 39-inch downed log. Riparian areas serve as travel corridors for Pacific fishers. Although Pacific fishers tend to avoid open areas with less than or equal to 40 percent canopy cover, they are known to use heavily harvested riparian areas for travel.

Protection measures: in the event this species is observed at MHDSF, we will follow Department of Fish and Game guidelines for protection measures for this species (Department of Fish and Game 2009).

Foothill Yellow-legged Frog:

Range: Rana boylii is endemic to Oregon and California. Historically, foothill yellow-legged frogs ranged throughout the western slopes of the Sierra Nevada south to Kern County. They range from near sea level to 5,800 feet in California.

Foothill yellow-legged frogs have declined dramatically in the Sierra Nevada. Lanoo (2005) speculates that air-borne pesticides (that move east on the prevailing winds blowing across the highly agriculturalized Central Valley) are likely to be the primary threat to foothill yellow-legged frogs in the Sierra Nevada foothills. The populations of foothill yellow-legged frogs in greatest decline are all downwind of highly impacted (mostly agriculturalized) areas, while the largest, most robust frog populations are along the Pacific coast.

Life history and habitat requirements: In the southern Sierra Nevada populations, breeding may occur later after the snows melt from April to July. Foothill yellow-legged frogs mate and lay eggs exclusively in streams and rivers. Tadpoles typically transform after 3 to 4 months.

Foothill yellow-legged frogs are primarily stream dwelling. Stebbins (2003) describes foothill yellow-legged frogs as stream or river frogs found mostly near water with rocky substrate, as found in riffles, and on open, sunny banks. Critical habitat (i.e., habitat suitable for egg laying) is defined by Jennings and Hayes (1994a) as a stream with riffles containing cobble-sized (7.5 cm diameter) or larger rocks as substrate, which can be used as egg laying sites. These streams are generally small to mid sized with some shallow, flowing water.

Habitat Protection: This species may occur in suitable habitat at lower elevations on the Forest, but extant populations are unknown. Given this species' close association with streams and rivers, establishment of watercourse and lake protection zones as described in the Forest Practice Rules are expected to provide the necessary habitat protection. However, on identification of the species on the Mountain Home Demonstration State Forest site specific protection measures will be developed that potentially exceed those described in the Forest Practice Rules.

Sierra Madre (Southern Mountain) Yellow-legged Frog:

Rana muscosa is endemic to California, U.S.A. The Southern Mountain Yellow-legged Frog once ranged from Palomar Mountain in San Diego County through the San Jacinto, San Bernardino and San Gabriel Mountains of Riverside, San Bernardino and Los Angeles counties in southern California. These formed four isolated clusters of montane populations. In addition the species occurred as an isolated cluster of populations on Breckenridge Mountain, south of the Kern River in Kern County, and in the Sierra Nevada mountains in Tulare, Inyo, and Fresno counties, extending north to Mather Pass. The distribution of Rana muscosa in the Sierra Nevada is bordered by the crest of Sierra Nevada. No populations occur east of the crest. The mountain ridges that separate the headwaters of the South Fork Kings River from

the Middle Fork Kings River, from Mather Pass on the John Muir Trail to the Monarch Divide, form the northern border of the range. R. muscosa is extinct on Palomar and Breckenridge mountains.

This amphibian species complex including Rana muscosa and Rana sierrae was once the most common vertebrate in the high elevation Sierra Nevada. Rana muscosa have declined dramatically despite the fact that most of the habitat is protected in National Parks and National Forest lands. A study that compared recent surveys (1995-2005) to historical localities (1899-1994; specimens from the Museum of Vertebrate Zoology and the California Academy of Sciences) found that 96.2% of populations had gone extinct, with only 3 remaining out of 79 resurveyed sites (Vredenburg et al. 2007). The two most important factors leading to declines in R. muscosa are introduced predators and disease.

Life History and Habitat Requirements: In the southern Sierra Nevada populations, breeding may occur later after the snows melt from May to July. Fertilization is external. A cluster of eggs is laid in shallow water and is left unattached in still waters, but may be attached to vegetation in streams. Tadpoles in the Sierras may overwinter, possibly taking as many as 3 or 4 summers before they transform.

The species inhabits lakes, meadow streams, isolated pools and sunny riverbanks in the Sierra Nevada. Open stream and lake edges with a gentle slope up to a depth of 5-8 cm. seem to be preferred that range in elevation of 984 ft. to over 12,000 ft. (370 - 3,660 m.). In the Sierra Nevada, adult mountain yellow-legged frogs occupy wet meadows, streams, and lakes; adults typically are found sitting on rocks along the shoreline, usually where there is little or no vegetation. In the Sierra Nevada, most frogs are seen on a wet substrate within 1 m of the water's edge. Both adults and larvae are found most frequently in areas with shallow and warmer water.

Although unlikely, the Mountain Home Demonstration State Forest may support a population of this now uncommon species. The California Natural Diversity Database notes two occurrences from 1904 in Sequoia/Kings Canyon National Park at the Middle Fork Tule River and Summitt Lake. Given this species' close association with wet areas, establishment of watercourse and lake protection zones as described in the Forest Practice Rules are expected to provide the necessary habitat protection. However, on identification of the species on the Mountain Home Demonstration State Forest site specific protection measures will be developed that potentially exceed those described in the Forest Practice Rules.

Sierra Nevada Red Fox:

The Sierra Nevada Red Fox (Vulpes vulpes necator) is a State Threatened species. Range: Grinnell (1937) described the distribution of the red fox as occupying "high elevations throughout the Sierra Nevada from Tulare County to Sierra County, and the vicinities around Mt. Lassen and Mt. Shasta. The current range and distribution of red fox is unknown. The only known current population is in the vicinity of Lassen Peak, with periodic sightings by inexperienced observers throughout its historic range.

It is highly unlikely that the distribution of the Sierra Nevada red fox would include Mountain Home Demonstration State Forest. However, should the species occur on the State Forest consultation with Federal and State wildlife agencies concerning appropriate protections would be initiated.

Wolverine:

The wolwerine is a State Threatened species. Verifiable wolverine sightings in California are very rare. California wolverine sightings within the 9 quadrangle CNDDB search area are no more recent than 1973 where one occurrence is noted on Blue Ridge within the Dennison Peak quadrangle near the Milo Fire Station. Earlier sighting include an observation in 1970 at the Quinn Ranger Station in Sequoia/Kings Canyon National Park; a 1962 observation on the Sequoia National Forest (T19S R31E Section 27); and a 1907 observation of wolverine sign by Grinnell at Grouse Flat 8 miles southeast of Lake Kaweah. In February 2008 a remote camera captured the image of a wolverine on the Tahoe National Forest, an area from which the species was believed to be extirpated since 1922. Genetic studies of this individual indicate that it is most closely related to Rocky Mountain populations, the nearest being 600 miles away in the Sawtooth Range of Idaho.

Should the species occur on the State Forest consultation with Federal and State wildlife agencies concerning appropriate protections would be initiated.

California Condor:

The California Condor *(Gymnogyps californianus)* is State and Federal endangered. Mountain Home is within the range of the California Condor, and the species has been known to historically occupy giant sequoia (Snyder et al 1986), however tree nesting by the species is thought unlikely given present numbers and habitat utilized. All recent California Condor nest sites have been located on public lands within the Los Padres, Angeles, and Sequoia National Forests.

California Condor are not known from Mountain Home Demonstration State Forest. The California Natural Diversity Database does note however an important roosting area typically utilized from April through September on Blue Ridge within the Frazier quadrangle west of the State Forest. Should the species occur on the State Forest, consultation with Federal and State wildlife agencies concerning appropriate protections would be initiated.

Terrestrial Vertebrate Species Richness

The California Natural Diversity Data Base (CNDDB) and the Spotted Owl Database are based on actual observations of rare plant and animal species and communities statewide with the goal of providing the most current information available on the state's most imperiled elements of natural diversity. Consequently the data provided does not represent an exhaustive and comprehensive inventory.

In order to assess the likelihood of additional terrestrial vertebrate species of concern occupying habitats present within the Mountain Home Demonstration State Forest, the California Wildlife Habitat Relationships System was queried[2]. Types and extent of CWHR types on MHDSF are shown in table 2 below. Inclusion of other uncommon habitat conditions on the forest such as pond, emergent wetland, chaparral brush etc. would add to the species list. The CWHR query yielded a total of 12 amphibian, 20 reptile, 127 bird and 68 mammal species.

Table 2. Mountain Home Demonstration State Forest CWHR habitat types and extent.

CWHR Type	Acres
MC5M	2771
MC5P	61
MHC4D	206
MHW4D	346
MHW5D	164
WFR4P	103
WFR5M	1177

Mountain Home is a research and demonstration forest, and we plan to continue to add to our knowledge of biological resources over time, and incorporate that knowledge into our management

[2] The California Wildlife Habitat Relationships System (CWHR) is the principal model used to predict species occurrence and change in habitat capability. Habitat capability in this context is an acreage weighted numerical expression derived from the arithmetic mean of habitat values for breeding, feeding, and cover for each species in each CWHR habitat stage. The CWHR System (http://www.dfg.ca.gov/whdab/html/cwhr.html) contains life history, management, and habitat relationships information on 675 species of amphibians, reptiles, birds, and mammals known to occur in California. The model was developed to predict species occurrence and abundance response to habitat alteration. Species prediction accuracy varies based on habitat types, taxonomic class, presence or absence of special habitat elements, and level of habitat relationship model validation. CWHR Version 8.2 was used.

practices. An essential part of this adaptive management process is to collaborate with, and draw upon knowledge from neighboring landowners (Axtell and Terrell 2009).

Plant Species of Concern

A plant scoping assessment for the area including MHDSF is included in Appendix 1. A nine quad search of processed CNDDB data centered on the Camp Wishon quad and Mountain Home State Forest, identified 26 plant species. One plant species is listed as Federal threatened and state endangered (*Clarkia springvillensis*) and one state endangered (*Brodiaea insignis*). Twenty other species are considered CNPS List 1B species independent of the state or Federal listings described above. While it is unlikely that all or even most of these species would find suitable habitat on Mountain Home, the number of species provide a rough indicator of extent of plant species of concern in the general vicinity of the Forest. Additional survey effort for currently undocumented species may add to this list or make additional adjustments specific to species occurring on Mountain Home.

Two plant species of concern are currently known from the southwest corner of the Mountain Home Demonstration State Forest (California Natural Diversity Data Base, accessed October 13, 2009). A botanical survey of MHDSF (Trayler and Mallory 1999) resulted in the discovery of Keil's daisy and Greenhorn fritillary. Both plant species are listed as California Native Plant Society List 1B.3 (California Native Plant Society 2009). The plants on List 1B are rare throughout their range with the majority endemic to California. Most of the plants have declined significantly over the last century. List 1B plants constitute the majority of the plants in CNPS' Inventory with more than 1,000 plants assigned to this category of rarity.

Fritillaria brandegeei - greenhorn fritillary. A perennial herb found only in California in lower montane coniferous forest on granitic soils and at an elevation of 5000-7000 feet. The species exhibits a blooming period of April-June.

Erigeron inornatus var. keilii - Keil's daisy. A perennial herb found only in California in lower montane coniferous forest within meadows or near seeps and at an elevation of 5900-7200 feet. The species exhibits a blooming period of June-September.

Protection Measures: surveys for plant species of concern will be conducted prior to implementation of individual projects. If any CNPS listed 1.B or 2 species are encountered, a 50 feet no entry buffer will be flagged. Mitigation measure # 3 will be implemented. No heavy equipment or herbicides will be used within the buffer. Directional falling away from the buffer will be implemented. The same protection measures will be used if other plant species of concern are encountered on individual projects.

a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?

Adherence to the mitigation measures discussed above reduces the probability of any potential impacts from direct impacts of habitat modifications to candidate, sensitive or special-status species, to less than significant.

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?

Adherence to the mitigation measures discussed above reduces the probability of any potential impacts on riparian habitat or other sensitive natural community to less than significant.

c) Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Adherence to the mitigation measures discussed above reduces the probability of any potential adverse effects on Federally protected wetlands to less than significant.

d) Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Adherence to the mitigation measures discussed above reduces the probability of substantially interfering with the movement of any native resident or migratory fish or wildlife species, established migratory wildlife corridors or native wildlife nursery sites to less than significant.

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No impact. The project does not conflict with any policies or ordinances protecting biological resources. The California Public Resources Code sections 4721 to 4727 state that it is the policy of the State to preserve as far as possible the giant sequoia species. Destroying a giant sequoia tree over 16 feet in diameter is a misdemeanor in the County of Tulare in which the project is located. The project fully complies with this legislation and in fact exceeds requirements by recruiting, over time, replacement old growth giant sequoia from second growth trees.

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No impact. The project fully complies with the State and Federal endangered species acts. All sensitive, threatened and endangered species will be protected. There is no known Natural Community Conservation Plan in the vicinity of Mountain Home that would be affected by actions taken under the project (Department of Fish and Game, 2009a). There are no known habitat conservation plans in the vicinity of Mountain Home that would be affected by actions taken under the project.

The giant sequoia region consists of the natural range of giant sequoia along the western slopes of the Sierra Nevada, from the American River to southern Tulare County. The majority of the region is dominated by unmanaged giant sequoia reserves and a preponderance of large old trees. Mountain Home is surrounded by the Giant Sequoia National Monument, which is managed for preservation and restoration of giant sequoia and associated communities. This project is consistent with the management of the Giant Sequoia National Monument as defined in legislation and the scoping process for the Monument management plan. In addition to protection of old growth giant sequoia, Mountain Home also emphasizes research, demonstration and management in young growth giant sequoia stands to perpetuate resource values and our understanding of this tree species.

g) Would the project exacerbate climate change or increase greenhouse gas emissions?

No impact. This analysis evaluates whether climate change and greenhouse gas (GHG) issues related to management of Mountain Home have the potential to be a significant environmental effect, either on a project basis or cumulatively. Table 3 below summarizes estimated net carbon dioxide sequestration levels under proposed management at Mountain Home over a 100-year planning interval. A 100-year outlook is necessary in forested ecosystems where trees can take more than 50 years to reach maturity. The 100-year planning interval allows a minimum period necessary to evaluate the long-term behavior of forested ecosystems while not exceeding the range of applicability of mathematical simulation models. The analysis shows substantial positive carbon sequestration benefits. Proposed management at Mountain Home will sequester a net CO2 equivalent of 765,500 tons of carbon at the end of 100 years.

Table 3. Estimated carbon sequestration at Mountain Home over the next 100 years.

1	2	3	4	5	6	7
Current standing inventory	CO2 stored in current standing timber	Standing inventory at end of 100-year planning interval	CO2 stored in standing timber at end of 100-year planning interval	Total harvest over 100-year planning interval	Total CO2 sequestered in forest products at end of 100-year planning interval	Total net CO2 sequestered at end of 100-year planning interval (4-2+6)
*MBF	Tons	MBF	Tons	MBF	Tons	Tons
271,487	525,942	386,572	748,892	280,060	542,550	765,500

*MBF is thousand board feet.

Emissions from the Forest include vehicles and buildings used by the Department that are associated with management. It also includes emissions from harvesting and manufacturing. Downstream accounting was the approach chosen for this analysis. This is the most conservative accounting approach because it does not include the negative substitution effect that occurs when alternative higher-GHG-impact building materials such as steel and concrete are used instead of wood products. Emissions from vehicles and buildings are estimated as follows:

Vehicles: 10 tons per year x 100-year planning horizon = 1,000 tons

Buildings: 0.03 tons per year x 100-year planning horizon = 3 tons

Total emissions add up to 1,003 tons for the 100-year planning interval.

Harvesting emissions include in-woods emissions from equipment and vehicles and transportation to a mill. Mill emissions estimates from processing are included because long-term storage of wood products is included in the analysis. Mill emissions include sawing, drying, energy generation, and planing. Transport to final destination is also included. The entire life cycle for green-dried lumber is included (Puettmann and Wilson, 2005). This results in a total emission estimate of 0.13 metric tons CO2 equivalent per thousand board feet (MBF).

Given the total harvest of 280,060 MBF over the 100-year planning interval in Table 3, this equates to 36,408 tons of CO2 equivalent from harvesting emissions. Including vehicle and building emissions, the total GHG emissions estimate for Mountain Home is 37,411 tons of CO2 equivalents. These harvesting emissions including full life-cycle of wood, vehicle, and building emissions, represent 4.9 percent of the total carbon sequestered (column 7 in Table 3).

The conclusion from the above analysis is that there is a substantial positive carbon sequestration benefit, or a net negative emission of GHGs at Mountain Home under the

guidance of the project. The management plan proposes to harvest less biomass (and to emit less CO2) than is being accumulated and sequestered through growth.

Climate change science is still in its infancy. There are likely wide error bars around the above estimates, given the general level of the analysis and the relatively new estimation equations in the literature. For example, estimates of carbon sequestered in table 3 above were based only on the bole volume of trees and did not include carbon contained in roots, crowns and the forest floor. This results in an underestimate of carbon sequestered during the planning interval because of the increase in biomass on the Forest during the planning interval.

The result that positive sequestration benefits exceed emissions by orders of magnitude however, lends support to the conclusion that sequestration will be much greater than emissions. Our conclusion is also supported by estimates from the Air Resources Board, which indicate that forest land use in California results in a net decrease in atmospheric carbon, not an increase (http://www.arb.ca.gov/cc/inventory/data/tables/net_co2_flux_2007-11-19.pdf).

Since the net amount of carbon that would be sequestered under the project is greatly higher than the amount of carbon that will be released by Mountain Home management activities, there are no potential significant adverse environmental impacts, single or cumulative. In fact, significant beneficial impacts of net carbon sequestration will occur.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. Cultural Resources. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☐	☒	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☐	☒	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

Discussion

Numerous archaeological surveys as well as excavations have been conducted on Mountain Home. These surveys have been extensive and the forest has over 95% coverage as a result of the surveys. Several reports and articles pertaining to the archaeology of the forest are posted on the CAL FIRE website. In addition, two reports, described below, contain a summary of earlier State Forest archeological surveys.

The report titled: *The Prehistory of Mountain Home State Forest: A Region of Seasonal Occupation and Exploitation* by William J. Wallace, Edith Wallace, and Virgil Meeker, CDF Archaeological Reports Number 4, March 1989, summarizes earlier archeological surveys, their revisiting 22 sites, and test excavation at 5 sites.

A second report: *Excavations at the Sunset Point Site (CA-TUL-1052) Mountain Home Demonstration State Forest, Tulare County, California* by Brian D. Dillon, Ph.D., Consulting Archeologist in association with the California State University Bakersfield, Foundation, for the California Department of Forestry and Fire Protection, CDF Archeological Reports #11, September 1992, provides an in depth discussion of the prehistory of the area, previous research at the forest, the results of scientific excavation at the site as well as management recommendations.

There are no known archaeological resources that would be impacted by Mountain Home management activities. The management plan requires that prior to any ground disturbing activities (timber harvest, road building, prescribed burns, construction of new campsites, etc), potentially affected areas will be surveyed for archaeological resources. If any unrecorded sites are discovered during surveys or management activities, a CAL FIRE archaeologist will be contacted to determine the appropriate protection measures. Archaeological surveys will be conducted by professional archaeologists or Mountain Home staff who are trained to conduct archaeological surveys, under the guidance of a staff professional archaeologist (Foster, 2006).

Mountain Home's cultural resources management procedures are based on CAL FIRE's statewide *Management Plan for Historic Buildings and Archaeological Sites* (Foster and Thornton, 2001) and its accompanying Environmental Impact Report (Foster and Sosa, 2001) which prescribe general measures for identifying, evaluating, and managing heritage resources on CAL FIRE lands statewide including Mountain Home. This management plan was initiated in 1991 pursuant to Executive Order W-26-92, CEQA and PRC Section 5020 et seq., in

coordination with the SHPO and in consideration of comments from the interested public and Native American Tribes and organizations. For each of CAL FIRE's properties, including Mountain Home, the plan summarizes the inventory of recorded historic buildings and prehistoric and historic archaeological sites; identifies those buildings and sites determined to be significant per National and State Registers criteria in consultation with SHPO; establishes decision making criteria for managing its historic buildings and identifies those targeted for preservation; describes CAL FIRE's archaeology program, role in fire protection, Native American gathering policy, and artifact collections; and establishes specific management objectives and measures.

a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

All known historic resources have been recorded and protection measures developed. CAL FIRE's primary approach to managing significant heritage resources is to preserve them through avoidance of project related impacts. As prescribed by the management plan, if any unrecorded sites are discovered during surveys or management activities, a CAL FIRE archaeologist will be contacted to determine the appropriate protection measures. Procedures described in Foster (2006) will be used to avoid impacts. It is therefore determined that projects planned and implemented at Mountain Home would have a *less than significant* impact to cause a substantial adverse change in the significance of a historical resource.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

All known archaeological resources have been recorded and protection measures developed. CAL FIRE's primary approach to managing significant heritage resources is to preserve them through avoidance of project related impacts. As prescribed by the management plan, if any unrecorded sites are discovered during surveys or management activities, a CAL FIRE archaeologist will be contacted to determine the appropriate protection measures. Procedures described in Foster (2006) will be used to avoid impacts. It is therefore determined that projects planned and implemented at Mountain Home would have a *less than significant* impact to cause a substantial adverse change in the significance of a historical resource.

c) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

There are no known paleontological resources or sites existing at Mountain Home. Haughton's cave, also known as Crystal 67, is one of the best examples of a limestone cavern in the western states. Crystal 67 is a destination spot for many spelunkers and because of its unique geologic features, is visited relatively frequently. The cave has many precipitous drops leading into its rooms and chambers and therefore poses a safety threat to the general public.

Due to the inherent threat that the cave presents to the inexperienced caver and the potential for the limestone features within the cave to be damaged or stolen, the entrance to the cave remain locked. User groups are welcome to explore the cave by making a reservation and signing a waiver of liability and code of conduct. Albeit, there is some remote chance that a user could cause damage to a cave feature, it is unlikely because of the high accountability and conduct standards placed on the user groups. These measures have adequately protected the cave and its features, and will continue to do so for years to come. It is therefore determined that projects planned and implemented at Mountain Home would have a *less than significant* impact on paleontological or geologic features.

d) Would the project disturb any human remains, including those interred outside of formal cemeteries?

There are no known cemeteries or human remains existing on Mountain Home. No human remains or associated grave goods were encountered during the archaeological survey work on Mountain Home and human remains or grave goods are not likely to be encountered during project activities. However, the slight possibility exists for human remains to occur within the project area. If human remains were unearthed, but not protected in accordance with procedures in state law (see below), this could be a potentially significant impact. Mountain Home will follow the California Health and Safety Code and California Public Resources Code Section 5097.

The management plan requires that the following procedures be followed for discovery of human remains: In accordance with the California Health and Safety Code (CHSC) 7050.5(b), if human remains are discovered during ground-disturbing activities, CAL FIRE and/or the project contractor(s) shall immediately halt potentially damaging excavation in the area of the burial and notify the Tulare County Coroner and the CAL FIRE archaeologist to determine the nature and significance of the remains. The coroner is required to examine all discoveries of human remains with 48 hours of receiving notice of a discovery on private or state lands. If the remains are determined by the coroner to be Native American, he or she must contact by telephone, within 24 hours, the Native American Heritage Commission (NAHC) per CHSC 7050.5(c). The NAHC will in turn immediately identify and notify the Most Likely Descendent (MLD) in accordance with PRC 5097.98(a). CAL FIRE shall continue to protect the discovery area from damage or disturbance, per PRC 5097.98(b), until staff has discussed and conferred with the MLD regarding their recommendations for treatment of the discovery.

(1) The MLD preferences for treatment of the discovery may include the following:

a) The nondestructive removal and analysis of human remains and items associated with Native American human remains.
b) Preservation of Native American human remains and associated items in place.
c) Relinquishment of Native American human remains and associated items to the descendents for treatment.
d) Other culturally appropriate treatment.

(2) The parties may also mutually agree to extend discussions, taking into account the possibility that additional or multiple Native American human remains, as defined in PRC 5097, are located in the project area providing a basis for additional treatment measures.

It is therefore determined that projects planned and implemented at Mountain Home will have a *less than significant* impact in regard to disturbance of any human remains, including those interred outside formal cemeteries.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. Geology and Soils. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

a) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)

No impact. Review of California Geological Survey Special Publication 42 (Fault-rupture-Hazard zones in California) and Geologic Data Map #4B (Fault Activity Map of California and Adjacent Areas) found no active faults or faults with historic movement mapped within or immediately adjacent to Mountain Home. No surface rupture from fault activity is expected to occur on Mountain Home.

ii) Strong seismic ground shaking?

No impact. Strong seismic shaking on Mountain Home is not likely. The California Geological Survey Probabilistic Seismic Hazards Ground Motion map indicates that Mountain Home and immediate vicinity has a less than 10% percent probability of exceeding a maximum peak ground acceleration of 30 to 40 percent g* in 50 years. No areas in Mountain Home or immediate vicinity are known to have been damaged by historic earthquakes (historic means 1800 to present day).

* The unit g is the acceleration of gravity.

iii) Seismic-related ground failure, including liquefaction?

No impact. Seismic-related ground failure is feasible. Such failure would most likely consist of rock fall from steep outcrops that could be hazardous to people downslope of such outcrops. The combination of soil types, groundwater conditions, and seismic shaking intensity necessary for liquefaction does not appear present in Mountain Home, therefore the probability of seismic-induced liquefaction is very low.

iv) Landslides?

Less than significant impact. The few deep-seated landslides known to exist along the slopes leading into the North Fork of the Middle Fork of the Tule River are primarily due to saturated soils above a bedrock contact zone. The canyon is remote and infrequently used by the public during the wet season. During the winter period, physical barricades are placed on both County roads that access Mountain Home to prevent public use. Gates located on the single access road to the Tule River canyon are under the control of Mountain Home and they are locked during the winter period in the event that someone drives through the County barricades. With this in mind, it would be highly unlikely to expose people to potentially substantial adverse effects from landslides. There are no buildings located in areas likely to be affected by any deep-seated landslides. Proposed operations under the Management Plan, including timber harvest, vehicle traffic and recreation activities, would be unlikely to affect the natural potential for existing deep-seated landslides to adversely affect the public.

Individual projects conducted under the guidance of this Management Plan, which have the potential to affect soil stability (e.g. timber harvest, road building) are subject to multiagency THP review and comment or other CEQA review. This review would minimize the likelihood of destabilizing operations being conducted. The California Geology Survey (CGS) is part of the multiagency review team that provides comments as well as expertise during the review of THPs. CGS staff has a Certified Engineering Geologists (CEG) that participates in field review of individual projects, including THPs.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Less than significant impact. Forest roads are a source of soil erosion and are considered a major contributing source to stream sediment. Much of this sediment originates from points at or near watercourse crossings. The most serious erosion observed on Mountain Home is associated with the inside ditch network draining the roads. Inside ditch erosion has been shown to be a significant source of sediment delivery into stream systems.

Mountain Home routinely maintains all drainage facilities located on the forest to ensure that blockages that could prompt a road failure are minimized. The Mountain Home Management Plan provides for routine maintenance to ensure that the design, reconstruction, use, maintenance, and surfacing of Mountain Home's roads, road landings, and road crossings will

avoid, minimize, or mitigate adverse impacts to the aquatic habitats supporting fish, amphibians, and other aquatic organisms. An additional benefit may be the long-term reduction in the costs of repairs as a result of problem avoidance. Roads and watercourse crossings are inspected annually to prevent adverse impacts to the watershed and water quality. Active harvest operations are inspected regularly for compliance with the Forest Practice Rules (FPR) and waste discharge requirements. Soil erosion from Mountain Home roads will be minimized and impacts to water quality will be reduced to *less than significant* with the on-going inspection and maintenance program.

All crossings associated with timber harvesting that do not occur on an existing road are planned for temporary use. Temporary crossings are only used when watercourses are dry or otherwise mitigated on a site-specific basis when wet. Once crossing use is complete, the crossings are removed and any exposed soil resulting from the use and removal of said crossing is stabilized by a variety of methods. These projects are planned and implemented in THP's and are subject to interagency review by members of the Regional Water Quality Control Board (RWQCB), California Geologic Survey (CGS), Department of Fish and Game (DFG) and CDF. Any permanent crossing proposed at Mountain Home shall be sized to permit passage of a 100-year flood event.

Timber harvest activities are another potential source of soil erosion and sediment delivery to watercourses. The FPR, which regulate timber harvest activities, provide several rules for the protection of water quality and reduction of soil erosion. These rules include; the implementation of Watercourse and Lake Protection Zones, installation and maintenance of erosion control features, scattering and lopping of slash, appropriate stream crossing design and construction, and the implementation of a water drafting plan.

All timber operations are required to adhere to a waiver of waste discharge that is obtained from the Regional Water Quality Control Board (RWQCB). Included in the waiver is the requirement for effectiveness monitoring. The monitoring will provide early detection of any erosion issues requiring immediate correction. Where required, Mountain Home shall obtain a 1600 permit from the DFG for the installation or repair of watercourse crossings.

Additionally, the majority of Mountain Home is managed in an uneven-aged fashion. Such harvesting maintains vegetative cover, rain drop interception, evapotranspiration, and a source for needle cast, thereby reducing the potential for soil erosion by providing a means to reduce particle displacement from falling rain and runoff.

The adherence to the FPR, RWQCB waiver, 1600 agreements and the implementation of well designed silvicultural systems will ensure the potential project impacts to soil erosion and topsoil loss are *less than significant*.

c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Less than significant impact. Although it is conceivable that operations carried out under the Management Plan could feasibly destabilize soils within Mountain Home, such projects are subject to THP review or other CEQA review and comment. This process would minimize the likelihood of destabilizing operations occurring as a result of proposed projects.

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?

No impact. Expansive soils as defined in the Uniform Building Code are not located on Mountain Home and no construction of major new structures are planned.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No impact. There are five septic systems in use at Mountain Home. Four are located within the bounds of Mountain Home proper, and the remaining system is located at the Mountain Home winter office located approximately seven miles west of the forest. The forest facilities with septic systems are “the house that Jack built”, summer barracks, summer office, and pack station. These systems have been in place since the late 1940’s and no known problems have occurred. No other septic systems are planned to be installed on Mountain Home. The toilets located at the campgrounds are self-contained and require pumping for removal of the waste. Licensed contractors dispose of the waste.

ENVIRONMENTAL ISSUES		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. Hazards and Hazardous Materials. Would the project:					
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h)	Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

Discussion

Potentially hazardous materials located on Mountain Home or used on Mountain Home for management activities include equipment fuel and oil, petroleum and propane storage tanks, dust palliatives, pesticides, marking paint, and incendiary and firing devices. Proper use, storage, and transportation of these chemicals should not result in any potential significant impacts to the environment. Potential significant impacts could occur by accidental spilling of the material. The following four mitigation measures will be used to avoid significant impacts to the environment:

1. To insure that all material is properly used, stored, and transported, Material Safety Data Sheets (MSDS), material labels, and any additional handing and emergency instruction of the materials are kept on file at the Mountain Home Forest Office.

2. Any state employee handling these materials will be made aware of the potential hazards, given proper training and instruction, and also made aware of the location of the MSDS, and any other documentation for the material.

3. All contractors used in the application or use of these hazardous materials shall have the appropriate licenses and be able to read and understand the MSDS, labels, appropriate recommendations, and application instructions.

4. The storage of potentially hazardous materials on Mountain Home is in accordance to the MSDS and any buildings that are used for storage will display appropriate placards.

Small amounts of equipment fuel, oils and burn mix are stored in petroleum approved containers in a placarded outbuilding at the headquarters. A 1,000 gallon gas vault, 450 gallon propane at headquarters, 400 gallon propane at the Pack Station, saw mix in 1 gallon and 5 gallon spill-proof containers, motor oil and saw mix (all loose containers) are locked in a concrete building tanks are above ground and access is restricted to CAL FIRE employees.

Firing and incendiary devices are stored in accordance to the MSDS with ignition devices and fuel stored separately. These devices are only used by properly trained CAL FIRE employees. Storage buildings display the appropriate placard.

The types of dust palliatives that may be used on Mountain Home are hygroscopic salts and resins, which are considered to be non-hazardous as per MSDS information provided to Mountain Home. These materials are non-flammable, non-combustible, and are considered to be low or non-toxic to aquatic organisms. When these materials are utilized on Mountain Home, they will be applied under ideal weather conditions to allow for rapid curing. Potential hazards associated with the proper delivery and application of these products is very unlikely. By controlling the application process, using only licensed applicators and adhering to the MSDS, product labels and application recommendations, accidental spills are minimized, eliminated, and controlled if they occur. Additionally over 90% of dust abatement on Mountain Home is accomplished by use of water and water trucks.

Pesticides have been used on MDSF for demonstration, research and for the establishment, survival and improved growth of new forest stands. Proposed future use will be for the same objectives and to maintain fuel breaks. Herbicides may be used for the periodic control of invasive or noxious weeds. The use of pesticides as a tool to control vegetation is determined by the vegetation present on site, by the vegetation targeted for control and the level of control needed to accomplish the goals of the project. These factors, as well as local weather patterns, soil types, topography, and the presence of threatened or endangered species are used to determine if herbicides will be used. The specific recommendation for the type of pesticide, application rate, timing, and application method will be determined by the site specific conditions and made by a Licensed Pest Control Advisor (PCA).

The main brush species targeted for control on Mountain Home are manzanita, whitethorn, cherry and bearclover. Other species that may be targeted in specific situations are gooseberry, currant, bitter cherry and various grasses. Past application methods have been typically been backpack application, no aerial applications have been conducted. Individual pesticide applications are based on label and MSDS restrictions, and written recommendations by PCA, that provide CEQA equivalency. The recommendations build upon the pesticide, surfactant, and adjuvant labels and MSDS's which provide information potential for movement and toxicity. The PCA recommendations consider site specific information such as vegetation present on site, targeted species, restrictions on chemical use, current and forecasted weather, soil types,

topography, and the presence of threatened or endangered species. These recommendations also evaluate proximity to schools, apiaries, neighbors, domestic water systems, presence of wetlands, watercourses, amphibians, and fish. If necessary these recommendations will include mitigations to reduce the impacts to apiaries, humans, and/or biological resources. Mitigation examples include but are not limited to drift control measures, buffers, avoidance, weather restrictions, and timing.

Specific pesticide use depends on the nature of the vegetation and site conditions and may change based on availability from the manufacturer, registration status, feasible treatment alternatives and the recommendations of the PCA. Active ingredients in pesticides used historically on Mountain Home included, 2-4D, Asulam and possibly other products. There have been no herbicide applications in the last decade at the forest (Frank Spandler, personal communication). Future applications may consider the use of glyphosate, imazapyr or triclopyr. New products, formulations, and application techniques may provide better control and improved environmental toxicology profiles.

Information on some of the more common herbicides proposed for use are included below. These summaries are not intended to be exhaustive reviews of the herbicides that may be used on Mountain Home. Other pesticides may also be used on the Forest. The summaries below include an introduction to the respective products and a summary of some attributes.

The California Environmental Protection Agency, Department of Pesticide Regulation, maintains a web site with information (www.cdpr.ca.gov/docs/label/m4.htm) as does the National Pesticide Information Center (http://npic.orst.edu/) and the Extension Toxicology Network (http://extoxnet.orst.edu/). The UDSA Forest Service has technical risk assessments at http://www.fs.fed.us/foresthealth/pesticide/risk.shtml.

Glyphosate is widely used as the proprietary product Roundup®. There are now other glyphosate formulations registered for use in California including labels for aquatic use and formulations with different adjutants. Glyphosate is used to control grasses, herbaceous plants including deep-rooted perennial weeds, brush, and some broadleaf trees and shrubs. Timing of application is critical for effectiveness on some broadleaf woody plants and conifers. It is applied to foliage and rapidly moves through the plant. It acts by preventing the plant from producing an essential amino acid. It also may be used as a cut stump, injection, or frill application directed to the cambium. The potential for leaching into groundwater is low as it is strongly adsorbed by soil particles. The half-life in water is 7 days. The half-life of glyphosate in soil can range from 2 to 174 days. The surfactant in Roundup® has a soil half-life of less than one week. It does not evaporate easily. Roundup® has no known effect on soil microorganisms (SERA 2003a).

Glyphosate's aquatic toxicity varies with the formulation. Accord® and Rodeo® are rated respectively as slightly toxic to practically nontoxic for aquatic organisms. Roundup® Pro is slightly toxic to aquatic invertebrates and moderately toxic to fish. Neither formulation bioaccumulates in fish. SERA (2003) summarized studies that showed with regard to pH, the toxicity of glyphosate decreases and the toxicity of the surfactant increases with increasing pH. It also noted two studies indicate that POEA (a component of surfactant additive of Roundup) is substantially more toxic than glyphosate and that POEA surfactant is the primary toxic agent of concern for fish (SERA 1997). The aquatic Rodeo® formulation does not contain surfactant. Glyphosate is practically non-toxic to birds, mammals and bees.

Glyphosate was a slight eye irritant in Category III (Table 1 Eye Irritation). Glyphosate dermal rating is essentially non-irritating, Category IV (Table 1). Inhalation test results placed it in practically non-toxic, Category IV. For acute oral ingestion the results were practically non-toxic, Category IV. The EPA has concluded that glyphosate should be classified as a compound with evidence of non-carcinogenicity for humans. Based on the results of animal studies, glyphosate does not cause genetic damage or birth defects, and has little or no effect on fertility, reproduction, or development of offspring.

Glyphosate's widespread use worldwide has resulted in more data available on deliberate or accidental human exposures than the other compounds discussed here. Most short-term incidents in humans have involved skin or eye irritation or nausea and dizziness in workers after exposure during mixing, loading, or application. Swallowing the Roundup® formulation caused mouth and throat irritation, stomach pain, vomiting, low blood pressure and in some cases, death. These effects have occurred when the concentrate was accidentally or intentionally swallowed in amounts averaging about half a cup and not as a result of the proper use of Roundup® (SERA, 2003a).

The EPA approved labels for Roundup® Pro, Accord® and Rodeo® all carry the signal word CAUTION. The precautionary statements vary slightly by product. They include: "Hazard to Humans and Domestic Animals. Causes Eye Irritation. Harmful if Inhaled".

Imazapyr is sold under several trade names including Chopper and Habitat in California. This product can be applied by air, but primarily is applied by low-volume hand-held spray equipment as a foliar, basal stem treatment, cut stump treatment, tree injection, or frill. It controls plant growth by preventing the synthesis of amino acids. Action is slower than some other herbicides and can take several months or longer. Imazapyr can remain active in the soil for 6 months to 2 years. It is strongly adsorbed in soil and usually found only in the top few inches. Imazapyr is degraded in soils primarily by microbial action. It is soluble in water. It has a low potential for leaching into ground water. Like other herbicides the potential for movement into streams via stormflow can be reduced by utilizing a no-application streamside management zone. The half-life of imazapyr in water is about 4 days (SERA 1999b).

Imazapyr is practically nontoxic to fish and invertebrates (Table 1, Ecotoxicological Categories). EPA has approved an aquatic label in some states. Imazapyr is not expected to accumulate or build up in aquatic animals (I.V. 1995). Imazapyr is considered practically non-toxic to mammals and birds (Category IV, Table 1). Its toxicity to bees is believed to be similar to mammals. Risk to non-target plants may be slightly higher than other herbicides because of its soil activity.

Imazapyr has been tested to be not irritating to eyes (Category IV, Table 1). Skin tests showed that it was moderately irritating, Category III. Acute oral ingestion test results placed it in Category IV. Lab studies with Imazapyr in rats indicated no evidence of teratology and tests were negative for mutagenicity.

The EPA approved labels for Chopper® or Arsenal® both carry the signal word CAUTION. The precautionary statements vary slightly by product. Chopper's label includes the most precautions including: "Hazard to Humans and Domestic Animals. Harmful if inhaled or absorbed though skin. Avoid breathing spray mist. Avoid contact with skin, eyes or clothing. Prolonged or frequent repeated skin contact may cause allergic reactions in some individuals".

Triclopyr is known commercially in forestry applications primarily in two forms; the triethylamine salt (Garlon® 3A) and the butoxyethyl ester (Garlon® 4). There are almost 40 other triclopyr-containing products that are labeled for use in California, many of which are marketed for turf, but some also list forestry uses as well. It is used to control woody plants and broadleaf weeds on rights-of-way, non-crop areas, forests, wildlife openings, and other areas. Triclopyr is applied by ground or aerial foliage spray, basal bark and stem treatment, cut surface treatment, and tree injection. Triclopyr acts by disturbing plant growth. Triclopyr's solubility in water is moderate to low. Sunlight rapidly breaks down triclopyr in water. The half-life in water is less than 24 hours. The potential for leaching depends on the soil type, acidity and rainfall conditions. Triclopyr should not be a leaching problem under normal conditions since it binds to clay and organic matter in soil. The ester formulation has lower water solubility and higher affinity for soils. Microorganisms degrade triclopyr rapidly; the average half-life in soil is 46 days. Triclopyr is slightly toxic to practically non-toxic to soil microorganisms.

Triclopyr varies in toxicity depending on the formulation. The ester form of triclopyr, found in Garlon® 4, is considerably more toxic to salmonids than Garlon® 3A. For Garlon® 4 the test results rate it highly toxic for aquatic organisms (Table 1, Ecotoxicological Categories). Under normal conditions in water, Garlon® 4 rapidly breaks down to a less toxic form. Garlon® 3A is slightly toxic to aquatic invertebrates and practically non-toxic to fish (Table 1). Triclopyr does not accumulate in fish. Garlon 3A and Garlon 4 have been specifically tested for malformations in the frog embryo teratogenesis assay and no statistically significant effects were noted. Amphibian toxicity appears to be similar to that of fish (Berrell et al. 1994). Triclopyr is slightly toxic to birds (Table 1). Triclopyr is moderately to slightly toxic to mammals. In mammals, most triclopyr is excreted, unchanged, in the urine. Triclopyr is nontoxic to bees (SERA, 2003b.)

The toxicology also varies by formulation for eye and skin tests. Garlon® 4 tests resulted in a rating as a slight eye irritant, Toxicity Category III, (Table 1, Eye irritation) and the dermal results were Toxicity Category III, (Table 1, Dermal). Garlon® 3A is classified as a severe eye irritant (Category I) and a skin irritant (Category IV). California Department of Pesticide Regulation notes it may cause a skin sensitization reaction. For both formulations one-hour inhalation the laboratory test resulted in a rating of Toxicity Category III, (Table 1, Inhalation). For both formulations the acute oral rating was Toxicity Category III, (Table 1, Oral). Based on the results of animal studies, triclopyr does not cause birth defects and has little or no effect on fertility, or reproduction. Triclopyr is mildly fetotoxic. The majority of the studies of carcinogenicity and mutagenicity were negative. However two studies provide conflicting information about tumors. The EPA has classified Triclopyr as a Group D chemical, not classifiable as to human carcinogenicity. The label notes that “If the material is handled in accordance with proper industrial handling, exposures should not pose a carcinogenic risk to man.”

The EPA approved labels for the two Triclopyr products differ. Garlon® 4 carries the signal word CAUTION. The precautionary statements for this ester formulation include: “Hazards to Humans and Domestic Animals. Harmful if Swallowed, Inhaled or Absorbed Through Skin. Avoid Contact With Eyes, Skin, or Clothing. Avoid Breathing Spray Mists or Vapors. Avoid Contaminating Food.” Garlon® 3A carries a higher level of concern signal word, WARNING. Its precautionary statements include: “Hazards to Humans and Domestic Animals. Corrosive. Causes Irreversible Eye Damage. Harmful if Swallowed or Absorbed Though Skin. Prolonged or Frequently Repeated Skin Contact May Cause Allergic Reaction in Some Individuals.”

The Tulare County Agricultural Commissioner has responsibility for compliance and enforcement actions, registration of businesses that perform pest control in Tulare County, issuing Restricted Materials Permits and Operator identification numbers and other regulatory responsibilities. The Regional Water Quality Control Board does not require notification for herbicide application that is applied in accordance to the product labels.

When pesticides are used on individual projects conducted under the guidance of this Management Plan, Mountain Home will review the recommended pesticides, surfactants, and adjuvants intended use and the possible environmental effects of each. Mountain Home will work with the PCA to determine whether the proposed use would be consistent with the label and the registration limitations.

Details of pesticide, surfactant and adjuvant chemistry, including mode of action and break down products as well as manufactures formulations are evaluated in depth by Environmental Protection Agency and the Department of Pesticide Regulation (DPR) during both the registration process and periodic reviews. In addition to the label and MSDS the following source should be reviewed for information relevant to the project; National Pesticide Information Center http://npic.orst.edu/ .

Mountain Home will also research significant new information showing changes in circumstances or available information that would require new environmental analysis. Significant new

information will be referred to DPR for that department's analysis as part of its ongoing evaluation program.

Accidental spills can be minimized, avoided or controlled, by adherence to the PCA's recommendation, and instructions on the product label. Additionally when pesticides are used on Mountain Home all pesticide containers must be secured when transported and all empty containers must be triple rinsed and disposed of properly off-site, with rinse water being put into the mixing tank. Any pesticide work conducted by contractors shall be closely monitored by Mountain Home staff. When pesticides are handled and applied according to the product label instruction, PCA recommendations, and the MSDS, significant adverse impacts to people, wildlife, water resources and the environment are not anticipated. The measures described above will insure that no significant adverse environmental or human health occurs as a result of pesticide application.

Cumulative impacts are unlikely because pesticide uses related to different control projects are separated in time and distance so that their individual effects do not reinforce or interact with each other. Pesticide use under the plan is neither widespread nor frequent. Pesticide may be used for demonstration, research and for the establishment, survival and improved growth of forest stands. Forestry pesticide uses are substantially less, in both frequency and amount, than in agricultural or urban settings.

Other pesticides, including rodenticides and fungicides, will not be routinely used. Because bark beetle infestations can be serious in this region, there may be limited use of pheromones (attractants and repellants) which are classified as insecticides. As part of measures to minimize the effects of root diseases, a borax compound (Soprax) may be used on stump surfaces. Any future use for these purposes would be carefully evaluated in Pest Control Recommendations and associated CEQA documents. There may be future proposals to treat the algae blooms that degrade fish habitat in ponds at Mountain Home. Any proposal for pond treatment shall be evaluated appropriately for both aquatic and terrestrial impacts and comply with appropriate water quality standards and the policies and regulations noted above.

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Adherence to the mitigation measures discussed above reduces the probability of any potential impacts from the use, transport, and storage of hazardous materials to less than significant.

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?

Adherence to the mitigation measures discussed above reduces the probability of any potential impacts from the release of hazardous materials into the environment to less than significant.

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

The project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. The nearest school is located approximately 6.5 miles away in Springville. Impacts are less than significant.

d) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Mountain Home is not on any list of hazardous material sites. The project will have no impacts

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

Mountain Home is not located within two miles of an airport. The project will have no impacts

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

Mountain Home is not located within the vicinity of a private airstrip. The project will have no impacts

g) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Timber operations have the potential to temporarily block roads with downed timber. The Forest Practice Rules (14 CCR 938.3) requires all logging roads remain passable during fire season for fire truck travel. To maintain compliance with 14 CCR 938.3, in the event that timber will block emergency response equipment, all timber operators are required to have equipment available on site to open the road immediately for emergency response equipment and to permit public access to and from Mountain Home. Impacts will be less than significant.

h) Would the project expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The forest is surrounded by the Sequoia National Monument, and a few neighboring private landowners to the west. The chance of the project exposing people or structures to a significant risk of loss, injury, or death involving wildland fires, is therefore very low. Several management activities have varying levels of risk to cause a wildfire. These activities are timber operations, road maintenance, campgrounds, and prescribed burning.

The Public Resources Code regulates all timber operations, road construction and maintenance, and site preparation activities conducted during the fire season. These activities are required to have appropriate fire suppression equipment on sight and maintained in a serviceable condition to aide in the suppression and control of any fires caused by the operations.

Campfires are only permitted in designated campsites and the campers are required to register thereby informing them of the rules on the State Forest. Additionally the campgrounds are maintained in a manner to lessen the potential of fire escape. Accumulation of dead vegetation is removed, trees pruned, and the fire rings are maintained.

In order to reduce the risk of wildfire, Mountain Home has plans to create shaded fuel breaks along the heavily used roads and a fuels reduction program throughout the forest. The primary methods of fuels reduction is through timber harvest and prescribed burning. All prescribed burning is conducted under specific meteorological conditions with the appropriate number of CAL FIRE personnel and equipment to maintain control. Impacts will be less than significant.

ENVIRONMENTAL ISSUES		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. Hydrology and Water Quality. Would the project:					
a)	Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?	☐	☐	☒	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?	☐	☐	☒	☐
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f)	Otherwise substantially degrade water quality?	☐	☐	☒	☐
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h)	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☒	☐
i)	Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j)	Result in inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion

Soil erosion and resultant sediment delivery to watercourses has the highest potential to degrade water quality on Mountain Home. Forest roads, campgrounds, prescribed burning, recreational trails and timber harvest activities are the primary sources of soil erosion caused by Mountain Home management activities and users. Research conducted in the central Sierra Nevada has shown that, other than intense wildfire, forest roads generally produce the most

impacts from sediment on water quality (MacDonald et al. 2004). In the southern Sierra Nevada, native and mixed surface roads were reported to produce more sediment than gravel surfaced roads (Korte and MacDoald 2007). Newer roads or roads upgraded to current Forest Service and State Forest Practice Rule standards have been found to perform better than older roads (Coe 2006, Cafferata et al. 2007).

Harvest units in the Sierra Nevada generally do not adversely impact water quality (Litschert and MacDonald in press). Litschert and MacDonald reported that timber harvest alone rarely initiated large amounts of runoff and surface erosion, particularly when newer harvest practices were utilized. Research conducted on prescribed burning in the Sierra Nevada has shown that the best strategy from a soil erosion and water quality perspective is to use fuel reduction treatments, such as prescribed fire and/or mechanical harvest, to lower wildfire potential (Miller et al. 2006). Stephens et al. (2005) reported that prescribed fire in the Lake Tahoe basin had no effect on soluble reactive phosphate and only minimal effects on nitrate in stream-waters. MacDonald et al. (2004) reported that prescribed fire produced sediment yields that were approximately the same as those produced without disturbance.

a) Would the project violate any water quality standards or waste discharge requirements?

Regional Water Quality Control Boards set standards for water quality and waste discharge. The water quality control plan for the Tulare Lake Basin (California Regional Water Quality Control Board Central Valley Region 2004) sets the following standards for the area including Mountain Home:

Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU. Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent. Where natural turbidity is equal to or between 50 and 100 NTUs, increases shall not exceed 10 NTUs. Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

Projects that could potentially result in violations of water quality standards or waste discharge requirements include, but are not limited to, the following:

Timber Harvesting Plans (THPs)

THPs, particularly those that include timber operations on steep ground, are in close proximity to watercourses, involve new road construction, include winter operation plans, or site preparation, could result in accelerated down-slope soil movement that could deliver to watercourses. All THPs at Mountain Home are designed to include Best Management Practices (BMPs) and comply with the California Forest Practice Rules (FPRs), Regional Water Quality Control Board (RWQCB) waivers of waste discharge, Department of Fish and Game (DFG) Stream Alteration Agreements (1600) and the Mountain Home Management Plan. THPs are subject to review by an interagency Review Team (RT) that is generally comprised of representatives from DFG, RWQCB, California Geological Survey (CGS), and the California Department of Forestry and Fire Protection (CAL FIRE), lead agency for CEQA analysis. Once THPs have been reviewed by the RT, recommendations are made and changes to the THP are performed resulting in a document that, once approved, has been determined to have a *less than significant* impact on water quality standards and waste discharge requirements.

Forest Roads

There are 31.6 miles of forest roads that make up almost 50 acres of the land base at Mountain Home. Unmaintained roads or roads that lack adequate drainage facilities can be a significant source of erosion and sediment delivery (Coe 2006). Approximately 10 miles of road are surfaced by means of rock, pavement or oil. The remaining roads manifest a native soil running surface. Many of these unsurfaced roads remain closed to public use while the Forest is seasonally open. Tulare County closes both roads that access Mountain Home during the winter period, which prevents road damage during periods of saturated soil conditions as defined in FPR 14 CCR §895.1. Routine annual inspections of road crossings and other drainage structures (waterbars, rolling dips, ditches and cross drains) identifies potential drainage and erosion issues. Hand crews from Mountain Home Conservation Camp (MHCC) are then tasked with cleaning culvert inlets, correcting ditch diversions, installing waterbars and placing energy dissipaters at those locations identified during the annual inspection. CAL FIRE HFEOs perform road surface grading, drainage realignment, and rolling dip construction as determined by the annual inspection and Forest Manager. Culverts are currently used for the majority of the road watercourse crossings found at Mountain Home. As these structures eventually succumb to time and the elements, they will either be replaced with maintenance free structures, such as rocked or vented fords, or have new culverts installed that are sized for 100 year storm events (Cafferata et al. 2004). These management strategies and site specific mitigation measures, when properly implemented, will result in impacts to water quality standards and waste discharge requirements that will be *less than significant.*

Road dust impacts to water quality are negligible on Mountain Home. We plan to harvest a relatively modest amount of timber annually in keeping with our legal mandate (Public Resources Code section). Planned harvest will be at most 3,800 MBF of timber per year, a low management intensity compared to other managed timber lands. Roads will be treated to control dust during periods of peak recreational and operational use.

Campgrounds

Campgrounds are a potential source of erosion and sediment delivery. There are currently 92 campsites in the five campgrounds located at Mountain Home, as well as the Methuselah group campground. The construction of up to ten additional campsites are reasonably foreseeable in the Shake Camp area to permit equestrian user camping. Use of Mountain Home campgrounds results in forest duff being raked away from campfire and cooking areas to prevent wildfire. Human trampling and vehicles keep the roads and parking areas compacted, thus slowing permeability and increasing surface runoff. Management strategies that reduce the effects of erosion and subsequent delivery of sediment to watercourses include the maintenance of natural vegetation filters in and adjacent to watercourses, maintenance of forest duff adjacent to watercourses, and rock surfacing of roads and parking areas that access the campgrounds. Bumpers and barricades that prohibit vehicular access to sensitive areas are strategically placed throughout the forest, particularly in the campgrounds and day use areas. These management strategies and site specific mitigation measures, when properly implemented, will result in impacts to water quality standards and waste discharge requirements that will be *less than significant.*

Trails

There are approximately 14 miles of recreational trails make up approximately 4.25 acres of the Mountain Home land base. These trails are a potential source of erosion and sediment delivery into watercourses. Over time, years of use have resulted in the trails taking on a trough shape that effectively intercepts and collects surface flows, transporting storm waters and sediment towards watercourses. The trails are routinely inspected for safety hazards and active erosion areas that have potential to deliver to watercourses. The erosion areas are identified and flagged in the field and MHCC crews are then tasked to install waterbars, energy dissipaters, and re-grade trails to drain into forest litter away from watercourses. These management strategies and site specific mitigation measures, when properly implemented, will result in

impacts to water quality standards and waste discharge requirements that will be *less than significant.*

Prescribed Fire

Prescribed fire is utilized at Mountain Home to accomplish a number of management objectives. It is used to reduce forest fuels, prepare seed beds, and provide heat to open giant sequoia cones, among other things. Prescribed fire can create a potential source of erosion and subsequent sediment delivery into watercourses, particularly when prescribed burns escape planned containment and produce catastrophic wildfires. This can occur as a result of the loss of forest duff and vegetative matter, as well as through the creation of hydrophobic soil. Typically, control burns at Mountain Home are done under a burn plan with tight prescriptions for air temperature, relative humidity, and wind speed, and they planned away from watercourses where the potential for these types of soil disturbance is minimized. Burn plans are developed by the Forest Manager in cooperation with the Unit pre-fire engineer. However, it is reasonably foreseeable that a research project to study the effects of fire inside the standard width of a watercourse protection zone (14 CCR §956.5) could be performed within the next 10 years. However, such a project would be subject to its own CEQA analysis, as it is outside the scope of general management activities that take place at Mountain Home. These management strategies and site specific management practices, when properly implemented, will result in impacts to water quality standards and waste discharge requirements that will be *less than significant.*

b) Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?

The campgrounds at Mountain Home, as well as the pack station, “the house that Jack built”, the public corrals, and the Forest Administration buildings are equipped with potable water. Two “fire fill” stations are also supplied by these systems. These waters originate from a series of four shallow horizontal wells and one spring that feed water tanks ranging from 1,000 to 15,000 gallons. Shallow horizontal wells, like springs, bring water to the surface by gravity flow. Consequently, overdraft is commonly not a problem with shallow horizontal wells. They function very similarly to springs. The advantage of horizontal wells over springs is the reduce risk of contamination of potable water sources at the surface. The tanks provide head pressure and all facilities are then supplied via gravity. All water that is used at Mountain Home essentially remains in a closed system. That is, it does not leave the Forest but rather, is returned back to the ground and becomes soil water which is used by the trees and other vegetation in the forest, in the same manner as the undiverted water from springs flowing onto the forest floor. The nearest well that could be impacted from Mountain Homes use of these systems is located over 1 mile from the Mountain Home well. There is a major granite batholith between Mountain Home and the neighboring well that greatly reduces the probability that the wells are located in the same aquifer. Furthermore, the water source for the Mountain Home well is a small spring that occurs adjacent to the well. Since the water that is used at Mountain Home remains in a closed system and the nearest neighboring well is likely located in a different aquifer, it is concluded that any project proposed at Mountain Home that impacts groundwater is *less than significant.*

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?

Road construction, road maintenance, installation of erosion control structures, installation and repair of watercourse crossings, and construction of temporary or permanent impoundments have the potential to alter the existing drainage patterns and cause substantial on or off site erosion.

Roads, Crossings and Drainage Facilities

There are 31.6 miles of forest roads that make up almost 50 acres of the land base at Mountain Home. Unmaintained roads or roads that lack adequate drainage facilities can be a significant source of erosion and sediment delivery (Coe 2006). Approximately 10 miles of road are surfaced by means of rock, pavement or oil. The remaining roads manifest a native soil running surface. Many of these unsurfaced roads remain closed to public use while the Forest is seasonally open. Tulare County closes both roads that access Mountain Home during the winter period, which prevents road damage during periods of saturated soil conditions as defined in FPR 14 CCR §895.1. Routine annual inspections of road crossings and other drainage structures (waterbars, rolling dips, ditches and cross drains) identifies potential drainage and erosion issues. Hand crews from Mountain Home Conservation Camp (MHCC) are then tasked with cleaning culvert inlets, correcting ditch diversions, installing waterbars and placing energy dissipaters at those locations identified during the annual inspection. CAL FIRE HFEOs perform road surface grading, drainage realignment and rolling dip construction as determined by the annual inspection and Forest Manager. Culverts are currently used for the majority of the road watercourse crossings found at Mountain Home. As these structures eventually succumb to time and the elements, they will either be replaced with maintenance free structures such as rocked or vented fords, or have new culverts installed that are sized for 100 year storm events (Cafferata et al. 2004). These management strategies and site specific management practices, when properly implemented, will result in impacts that do not substantially alter the existing drainage pattern of a site or area, do not alter the course of a stream or river, or result in substantial on- or off-site erosion or siltation. It is so determined that any such project that is planned and implemented at Mountain Home will be *less than significant.*

Impoundments

Impoundment of a natural watercourse could be deemed necessary to provide for wildlife habitat, fisheries, erosion control and/or fire suppression. However, this is not a reasonably foreseeable project. Any project of this type would be outside of the scope of the management activities of the Mountain Home Management Plan and would therefore be subject to its own CEQA analysis. An impoundment project would have to be permitted, at a minimum, through the DFG Stream Alteration Agreement process (1600) and would likely require engineering and geologic studies as well. Any such impoundment project would be planned to drain into the respective watercourse once the impoundment was at capacity. This would result in natural drainage patterns remaining unchanged both above and below the impoundment. Considering that the impoundment of a natural watercourse would not necessarily alter the existing drainage pattern of the site or area, or alter the course of a stream or river in a manner which would result in substantial on- or off-site erosion or siltation, it is determined that such an impact would be *less than significant.*

d) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?

Road construction, road maintenance, installation of erosion control structures, installation and repair of watercourse crossings, and construction of temporary or permanent impoundments have the potential to alter the existing drainage patterns and cause substantial on- or off-site flooding.

Roads, Crossings & Drainage Facilities

There are 31.6 miles of forest roads that make up almost 50 acres of the land base at Mountain Home. Unmaintained roads or roads that lack adequate drainage facilities can be a significant source of erosion and sediment delivery (Coe 2006). Approximately 10 miles of road are surfaced by means of rock, pavement or oil. The remaining roads manifest a native soil running surface. Many of these unsurfaced roads remain closed to public use while the Forest is seasonally open. Tulare County closes both roads that access Mountain Home during the winter period which prevents road damage during periods of saturated soil conditions as defined in FPR 14 CCR §895.1. Routine annual inspections of road crossings and other drainage structures (waterbars, rolling dips, ditches and cross drains) identifies potential drainage and erosion issues. Hand crews from Mountain Home Conservation Camp (MHCC)are then tasked with cleaning culvert inlets, correcting ditch diversions, installing waterbars and placing energy dissipaters at those locations identified during the annual inspection. CAL FIRE HFEOs perform road surface grading, drainage realignment and rolling dip construction as determined by the annual inspection and Forest Manager. Culverts are currently used for the majority of the road watercourse crossings found at Mountain Home. As these structures eventually succumb to time and the elements, they will either be replaced with maintenance free structures such as rocked or vented fords, or have new culverts installed that are sized for 100 year storm events (Cafferata et al. 2004). These management strategies and site specific mitigation measures, when properly implemented, will result in impacts that do not substantially alter the existing drainage pattern of a site or area, do not alter the course of a stream or river, or result in substantial on- or off-site flooding. It is so determined that any such project that is planned and implemented at Mountain Home will be *less than significant.*

Impoundments

Impoundment of a natural watercourse could be deemed necessary to provide for wildlife habitat, fisheries, erosion control and/or fire suppression. However, this is not a reasonably foreseeable project. Any project of this type would be outside of the scope of the management activities of the Mountain Home Management Plan and would therefore be subject to its own CEQA analysis. An impoundment project would have to be permitted, at a minimum, through the DFG Stream Alteration Agreement process (1600) and would likely require engineering and geologic studies as well. These separate studies and environmental analyses account for seismic activity, soil stability, peak flows, and other potential stressors that may result in an impoundment failure. Should the analysis determine that there is a significant risk of failure, the project would not be implemented, thus eliminating the risk of flooding. Any such impoundment project would be planned to drain into the respective watercourse once the impoundment is at capacity. This would result in natural drainage patterns remaining unchanged both above and below the impoundment. Considering that the impoundment of a natural watercourse would not necessarily alter the existing drainage pattern of the site or area, or alter the course of a stream or river in a manner which would result in substantial on- or off-flooding, it is determined that such an impact would be *less than significant.*

e) Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

There are no stormwater drainage systems located on or down stream of Mountain Home. Therefore, it is concluded that any project proposed at Mountain Home would not contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff and will have *no impact* .

f) Would the project otherwise substantially degrade water quality?

Projects at Mountain Home that have the potential to substantially degrade water quality include timber marking, timber harvesting, road construction and maintenance, recreational and managerial driving, camping, equestrian use, prescribed burning and herbicide applications. Off-road vehicle use is restricted to public roads and designated trails where impacts on water quality is negligible.

Timber Marking

Timber marking involves the use of petroleum based products to designate trees for harvest or retention. These products have the potential to degrade water quality should they enter into a watercourse. Timber marking that takes place at Mountain Home is done with self contained aerosol paint, so there is no threat of accidental spillage into a watercourse. In the event that non-aerosol paint is used, the Forest Manager shall instruct the crew to stay at least 50 feet from a watercourse when they are filling their paint guns. All timber marking that occurs at Mountain Home is conducted under the supervision and direction of the Forest Manager, so any potential to substantially degrade water quality is determined to be *less than significant*.

Timber Harvesting

Timber harvesting involves the use of petroleum products for combustion and lubrication purposes. These products have the potential to degrade water quality should they enter into a watercourse. THPs are designed to restrict fueling and servicing of equipment in landings or other areas located away from watercourses. All timber harvest projects implemented at Mountain Home are regularly inspected to ensure compliance with both the THP and the Timber Sale Contract. It is therefore concluded that timber harvest projects conducted at Mountain Home that could substantially degrade water quality will have a *less than significant impact*.

Road Construction and Maintenance

Road construction and maintenance involves the use petroleum products for combustion and lubrication purposes. These products have the potential to degrade water quality should they enter into a watercourse. Road construction projects shall only take place in accordance with an approved THP, so it will be subject to review and inspection as outlined above. Road maintenance work that occurs outside of a THP, is done by Department HFEOs under the supervision and direction of the Forest Manager. They shall be directed to fuel and service heavy equipment in landings or other areas located away from watercourses.

Dust abatement activities that occasionally occur at Mountain Home, particularly during log hauling, involves the use of water. No chemical treatments are anticipated nor are they anticipated. Road surfacing with tack oil has been done historically at Mountain Home, as it provides for a dust-free, wet weather road. It is anticipated that this practice will continue during future timber sales. When roads are scheduled for oil surfacing, they are closed to public use for a period of 2 to 5 days to prevent damage to the new surface while it cures. Treatment done in close proximity to a watercourse where it has the potential to deliver, shall be done under the direct supervision of the Forest Manager to ensure that the oil does not creep into the watercourse. Shovels and absorbent materials shall be on-site to prevent any accidental spillage or down-slope movement of the surfacing oil. Once this product cures it does not move off site.

All road construction and maintenance projects implemented at Mountain Home are regularly inspected to ensure compliance with either a THP or the forest management plan. It is therefore concluded that road construction and maintenance projects conducted at Mountain Home that could substantially degrade water quality will have a *less than significant impact*.

Recreational and Managerial Driving

Driving on Mountain Home roads has the potential to degrade water quality. The potential impacts stem from leaking fluid reservoirs, hoses and lines that supply various fluids to

operational components of the vehicles. It may also occur as the result of a traffic accident that ruptures a reservoir, hose or line. Accidents at Mountain Home are uncommon and leaky fluid occurrences are rare. All CAL FIRE vehicles are inspected and serviced regularly. Leaky vehicles belonging to the visitors of Mountain Home cannot feasibly be mitigated. Due to the rarity of occurrence and limited volumes of fluid being accidentally spilled, it is determined that driving motor vehicles on forest roads cannot substantially degrade water quality and any potential impact is *less than significant*.

Camping

Camping use has the potential to degrade water quality. The potential impacts associated with camping include laundering of clothing, dish washing, deposition of food stuffs, deposition of human wastes, detergents and potentially hazardous materials such as batteries, cooking fuel, and oil, into natural water bodies that provide aquatic habitat for fish and non-fish species. Copies of the State Forest Rules are posted at each toilet throughout the Mountain Home. These rules include the following section: 14 CCR §1422- POLLUTING WATERS. Allowing any substance into Forest waters that is harmful to fish or aquatic plants (includes bathing) is prohibited. Violations of State Forest Rules are misdemeanor offenses and punishable by up to a $1,000.00 fine. Furthermore, Mountain Home staff conduct weekend patrols of the campgrounds to inform users of the rules and enforce them as needed. Based on observed violations and camper behavior, it is determined that camping at Mountain Home does not substantially degrade water quality and any potential impact is *less than significant*.

Equestrian Use

Equestrian use at Mountain Home has the potential to degrade water quality. The potential impact associated with equestrian use is the deposition of feces directly into a watercourse. However, this is a natural, non-toxic substance and those streams in Mountain Home where trails are located do not provide domestic water. It is therefore determined that equestrian use at Mountain Home does not substantially degrade water quality and impact to water quality as a result of equestrian use is *less than significant.*

Prescribed Burning

Prescribed burning has the potential to degrade water quality. The potential impacts associated with prescribed burning include the accidental deposition of burn fuel and the down-slope movement of forest resins and by-products into a watercourse. The accidental deposition of burn fuel can occur when drip-torches are refueled, if the containers used for transporting fuel are leaking, or if refueling is done carelessly and subsequently spilled. These potential threats are exacerbated if burning is done while it is raining. The movement of forest resins and by-products can occur if a burn is conducted too close to a watercourse. Heavy rains can cause ash and resins to become displaced and eventually deliver to a watercourse. Typically, control burns at Mountain Home are planned away from watercourses where the potential for potentially degrading materials cannot feasibly enter a watercourse. All fueling of drip torches and vehicles used to transport fuel shall be done away from watercourses. All burning at Mountain Home is done under the supervision of the Forest Manager in compliance with an approved burn plan. Burn plans are developed by the Forest Manager in cooperation with the Unit pre-fire engineer. However, it is reasonably foreseeable that a research project to study the effects of fire inside the standard width of a watercourse protection zone (14 CCR §956.5) could be performed within the next 10 years. However, such a project would be subject to its own CEQA analysis as it is outside the scope of general management activities that take place at Mountain Home. These management strategies and site specific mitigation measures, when properly implemented, will result in impacts that will not substantially degrade water quality and will be *less than significant.*

Fire Fighting

Ammonium-based fire retardants are important in managing wildfires, but their use can adversely affect water quality (Norris and Webb 1989). Direct application to the stream surface

is most likely to cause fish mortality. Applications in the riparian zone mayaffect water quality, but not to the point of causing major toxic effects. Potential impacts on downstream eutrophication need to be considered (Norris and Webb 1989). To reduce impacts, it is important to identify stream sections that need to be protected, and to develop retardant application plans to minimize adverse effects on streams (Norris and Webb 1989).

The use of fire retardants involve a tradeoff between possible direct impacts of retardant on watercourses versus the beneficial effect of retardants in terms of arresting wildfire progress and preventing erosion and siltation effects of uncontrolled wildfires. CAL FIRE has adopted firefighting practices that minimize the probability of fire retardant drift into watercourses. To the extent feasible, firefighters will consult with meteorologists, Forest staff and resource experts on firefighting tactics that will minimize impacts on watercourses. Impacts are expected to be less than significant.

g) Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

No reasonably foreseeable projects are anticipated that would place housing within a 100-year flood hazard area nor is there suitable ground at Mountain Home where such housing could be done. It is therefore determined that management of Mountain Home will have *no impact* on housing within a 100-year flood plain.

h) Would the project place within a 100-year flood hazard area structures that would impede or redirect flood flows?

The construction of an impoundment to provide for wildlife habitat, fisheries, erosion control and/or fire suppression would have the potential to impede or redirect 100-year flood flows. However, this is not a reasonably foreseeable project. Any project of this type would be outside of the scope of the management activities of the Mountain Home Management Plan and would therefore be subject to its own CEQA analysis. An impoundment project would have to be permitted, at a minimum, through the DFG Stream Alteration Agreement process (1600) and would likely require engineering and geologic studies as well. These separate studies and environmental analyses account for seismic activity, soil stability, flood flows, and other potential stressors that may result in an impoundment failure. Should the analysis determine that there is a significant risk of failure, the project would not be implemented, thus eliminating the risk of flooding. Any such impoundment project would be planned to drain into the respective watercourse once the impoundment is at capacity. This would result in natural drainage patterns remaining unchanged both above and below the impoundment. Considering that the impoundment of a natural watercourse would not necessarily result in impeding or redirecting a 100-year flood flow, it is determined that such an impact would be *less than significant.*

i) Would the project expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

The construction of an impoundment to provide for wildlife habitat, fisheries, erosion control and/or fire suppression would have the potential to expose people of structures to a significant risk of loss, injury, or death, including flooding as a result of a dam failure. However, this is not a reasonably foreseeable project. Any project of this type would be outside of the scope of the management activities of the Mountain Home Management Plan and would therefore be subject to its own CEQA analysis. An impoundment project would have to be permitted, at a minimum, through the DFG Stream Alteration Agreement process (1600) and would likely require engineering and geologic studies as well. These separate studies and environmental analyses

account for seismic activity, soil stability, flood flows, and other potential stressors that may result in an impoundment failure. Should the analysis determine that there is a significant risk of failure, the project would not be implemented, thus eliminating the risk of flooding or loss to people or property. Any such impoundment project would be planned to drain into the respective watercourse once the impoundment is at capacity. This would result in natural drainage patterns remaining unchanged both above and below the impoundment. Considering that the impoundment of a natural watercourse would not necessarily result in significant loss, injury or death involving flooding as a result of a dam failure, it is determined that such an impact would be *less than significant.*

j) Would the project result in inundation by seiche, tsunami, or mudflow?

The Mountain Home area is located at an elevation ranging from 4,800 to 7,600 feet. It is further located on the west slope of the Sierra Nevada Mountain Range east of the Central Valley. Any projects proposed at Mountain Home will have *no impact* regarding inundation by seiche, tsunami, or mudflow.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. Land Use and Planning. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

a) Would the project physically divide an established community?

The project will not divide an established community. The nearest community to Mountain Home is Camp Nelson, located seven miles southeast of the forest. The project will have no impact.

b) Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Mountain Home is pubic land and is zoned TPZ. The project is compatible with the zoning and is required pursuant to Public Resources Code (PRC) §4645 and Article 8 of the California Board of Forestry and Fire Protection (Board) policy. The Board also establishes policy, which governs Mountain Home. Board policy states that the primary purpose of the state forest program is to conduct innovative demonstrations, experiments, and education in forest management. The project will provide guidance to Mountain Home staff and the policies of the Board are met by many of the management practices described within. The project will have no impact.

c) Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

Most of the forestlands adjacent to Mountain Home, are managed by the Giant Sequoia National Monument and Sequoia National Forest under a variety of land management documents. The project does not conflict with any of these documents. The project will have no impact.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X. Mineral Resources. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

The project will not result in the loss of availability of known mineral resources. Mountain Home has several rock sources that have been quarried for road rock and watercourse crossing armament. The rock sources are not commercial and the rock is only utilized on Mountain Home. The project will have no impact.

b) Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

Mountain Home is not designated in any plan as having locally important mineral resources. Minor amounts of gold, as well as copper and other non-precious metals are believed to occur on the property. The project will have no impact.

ENVIRONMENTAL ISSUES		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. Noise. Would the project result in:					
a)	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?	☐	☐	☒	☐
b)	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c)	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d)	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f)	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion

Mountain Home is located in a rural setting in which there are no permanent residents who would be exposed to the seasonal increase in noise levels associated with timber operations, road construction and maintenance. Timber operations and roadwork activities typically occur between the first of June and the end of October.

Visitors to Mountain Home who utilize the campgrounds will be exposed to equipment noise if timber operations are occurring in the vicinity of the campgrounds. The majority of campground use occurs on the weekends. Timber operations and roadwork will be conducted during the weekdays, to the extent feasible, to minimize the impact to forest visitors.

a) Would the project create exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?

The project as proposed will not have an increase in noise over historical levels. As defined in the Tulare County General Plan, Section 5.5, there are no “noise sensitive areas and uses” in the vicinity of Mountain Home. There are no known noise ordinances in the vicinity of Mountain Home. Restricting timber operations and road construction to week days will reduce conflicts with forest visitors and historical use shows noise impacts will be less than significant.

b) Would the project create exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

The project as proposed will not have an increase in noise over historical levels. Campers and day-users may experience a temporary increase to ground vibrations resulting from road maintenance activities. Restricting timber operations and road construction to week days will reduce conflicts with forest visitors and historical use shows noise and vibration impacts will be less than significant.

c) Would the project create a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

The project as proposed will not have an increase in noise over historical levels. The project will result in no impact.

d) Would the project create a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

The project as proposed will not have an increase in noise over historical levels. Restricting timber operations and road construction to week days will reduce conflicts with forest visitors and historical use shows noise and vibration impacts will be less than significant.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The project is not located within two miles of an airport. The project will result in no impact.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

There are no known private airstrips within 20 miles of Mountain Home. The project will result in no impact.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. Population and Housing. Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

a) Would the project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

The project will not increase population growth. Mountain Home and the surround forestlands are zoned TPZ and no developments in homes, businesses, or infrastructure is planned.

b) Would the project displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?

The project will not displace any residences.

c) Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

The project will not displace any persons.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. Public Services. Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Discussion

There are no substantial changes in this project from the Mountain Home 2003 management plan. The response times from emergency services will not be affected by management activities. CAL FIRE manages Mountain Home, and forest staff are available to assist with emergency response. The project does not conflict with, but rather assists with emergency response to incidents.

By Board policy one of Mountain Home's primary purposes is education in forest management. Mountain Home currently participates in several tours and presentations, including annual tours for colleges and universities. The nearest school is Springville School, approximately eight miles to the southwest of Mountain Home. The project will not impact school access to the Forest, or any school facilities. Mountain Home is public land and the project does not limit public access to Mountain Home.

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

Fire protection? The project will have no impact.

Police protection? The project will have no impact.

Schools? The project will have no impact.

Parks? The project will have no impact.

Other Public Facilities? The project will have no impact.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. Recreation. Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☒	☐

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

The primary recreational uses on Mountain Home are hiking, mountain bike riding, horseback riding, hunting, recreational driving, and camping. Projects that may cause an increase of use to existing neighborhood or regional parks or other recreational facilities include campground closures or the imposition of a camping fee. During the summer period when recreational use peaks it is unlikely that campgrounds would be closed. An exception would be if the campground had to be closed to eliminate a hazard or repair a facility. If such a closure occurred, it would be short-lived and the campground would reopen was the issue was resolved. A camping fee may increase camping at Balch Park, a neighboring campground operated by Tulare County. However, Balch Park already charges camping fees so the effect would most likely remain neutral. Temporary closures or the collection of fees would have a *less than significant* impact on increasing the use of neighborhood or regional parks.

b) Would the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

As a result of the increasing use of horseback riding, Mountain Home is currently reviewing ideas of constructing up to ten additional campsites to accommodate equestrian users. The necessary improvements would be consistent with the other campgrounds at Mountain Home. The project would involve the construction of a short access road and the installation of a self-contained toilet, benches, bear-proof food lockers, campfire rings and trash receptacles. The campground would be located on flat, stable ground in an area where no natural watercourses occur. Additional projects that are reasonably foreseeable is the continual maintenance and replacement of campground improvements as they succumb to time and/or vandalism. Any projects requiring construction or expansion of recreational facilities will have a *less than significant* impact on the environment.

ENVIRONMENTAL ISSUES		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. Transportation/Traffic. Would the project:					
a)	Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☒	☐
b)	Exceed, individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c)	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d)	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e)	Result in inadequate emergency access?	☐	☐	☒	☐
f)	Result in inadequate parking capacity?	☐	☐	☐	☒
g)	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

a) Would the project cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?

The project will result in no increase in traffic levels above historical use. An increase in truck traffic on Mountain Home and the access roads occurs during logging operations. Log hauling typically occurs between the first of June and the end of October. Timber sales on Mountain Home vary significantly in volume resulting in a range from 12 to as many as 16 loads per day moving on the access routes. The seasonal increases in truck traffic are typical for the local area and the local residents are accustomed to this traffic. Access roads to Mountain Home are designed to handle these and higher levels of truck traffic. Additionally during hauling operations the timber operators are required to maintain the seasonal roads in serviceable condition. The impact is less than significant.

b) Would the project exceed, individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

Logging truck traffic leaves Mountain Home by traveling down either Blach Park or Bear Creek Roads. The logging truck traffic originating from Mountain Home does not result in a significant increase in traffic on these roadways. The level of service to the roads should not be impacted. There will be no impact.

c) Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

The project will have no influence on any existing air traffic patterns.

d) Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

There are no known design features, along the access roads to Mountain Home, which are considered hazardous. There is no expected increase in hazards associated with Mountain Home traffic. The local residents are accustomed to logging truck traffic and there is no history of conflict with incompatible uses along the access roads to neither Mountain Home, nor are any expected. The project will have no impact.

e) Would the project result in inadequate emergency access?

Timber operations have the potential to temporarily block roads with downed timber. California Forest Practice Rules (FPRs) 14 CCR 938.3 requires that all logging roads must be kept passable during the fire season for fire truck travel. To maintain compliance with 14 CCR 938.3 in the event that timber will block emergency response equipment, all timber operators are required to have equipment available on site to open the road immediately for emergency response equipment. The impact on emergency access will be less than significant.

f) Would the project result in inadequate parking capacity?

At present, there is adequate parking at Mountain Home Headquarters to accommodate Mountain Home staff and visitors. The campgrounds can also accommodate several vehicles per campsite. The project has no potential impact on parking capacity.

g) Would the project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

The project has no potential to impact alternative transportation programs.

ENVIRONMENTAL ISSUES		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. Utilities and Service Systems. Would the project:					
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c)	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e)	Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?	☐	☐	☐	☒
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion

There are four septic systems for administrative sites and 25 self-contained pit toilets and septic systems located at campgrounds at Mountain Home.

a) Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

No impact. The septic system at Mountain Home Headquarters is adequate for the facilities and use. The toilet facilities at the campgrounds can accommodate the campground use. The project will not exceed wastewater treatment requirements of WQ.

b) Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No impact. The existing facilities at the campgrounds will be able to accommodate the additional planned campsites.

c) Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less than significant. There are no storm water facilities associated with this project. The installation of new drainage features (watercourse crossings and road drainage) and the replacement of old features shall adhere to the FPRs, WQ waiver, DFG permits. The replacement and installation of drainage features will have a less than significant impact on the environment.

d) Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

No impact. The existing water on Mountain Home and the Mountain Home water rights are sufficient to accommodate the project.

e) Would the project result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?

No impact. The existing facilities on Mountain Home will not be impacted by the project.

f) Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

No impact. The Project will not increase the production of solid waste generated on Mountain Home and should not exceed the capacities of the county landfill.

g) Would the project comply with federal, state, and local statutes and regulations related to solid waste?

No impact. The project will not violate any Federal, state, or local statutes regulating solid waste.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Mandatory Findings of Significance.				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	☒	☐
c) Does the project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Authority: Public Resources Code Sections 21083 and 21087.
Reference: Public Resources Code Sections 21080(c), 21080.1, 21080.3, 21082.1, 21083, 21083.3, 21093, 21094, 21151; *Sundstrom v. County of Mendocino*, 202 Cal.App.3d 296 (1988); *Leonoff v. Monterey Board of Supervisors*, 222 Cal.App.3d 1337 (1990).

a) Would the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?

The project has the potential to significantly impact Biological Resources and Hazards and Hazardous Materials. Implementation of mitigation measures 1 through 11 will reduce these impacts to a level of less than significant.

The development of projects under the guidance of this management plan will have separate analyses conducted based on the project's specifications and site-specific information. Potential impacts will be less than significant with the adherence to all applicable laws and regulations. See also the discussion above under Item IV, Biological Resources, and Item VIII Hydrology and Water Quality.

The implementation of this management plan will have a less than significant impact on cultural resources. Archeological surveys have been conducted throughout Mountain Home. Historical and cultural sites have been recorded and management measures developed. Any projects conducted under the guidance of this management plan that would cause ground disturbance,

will require an archeological survey. See also the discussion above under Item V, Cultural Resources.

b) Would the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Assessment Area

The cumulative effects assessment area was established based on the planning watersheds that contain Mountain Home. This assessment area is used because the primary cumulative impact issues related to forest management typically express themselves at the scale of planning watersheds or a subset of the planning watershed area. As shown in figure 1, landowners within this assessment area include MHDSF and the Giant Sequoia National Monument.

Land Use Activities

The dominant land use under the management plan that could potentially cause cumulative impacts include recreation, forest management and research and demonstration.

The management plan will not cause adverse cumulative impacts from recreation. Recreation on Mountain Home is dispersed and occurs at levels that have been shown to have negligible impacts on the environment (McNally, 1990). The management plan does not propose any significant changes in the recreation pattern or intensity. Recreation in the Giant Sequoia National Monument is strictly regulated so as not to jeopardize the mandated protection of old growth giant sequoia trees. Motorized recreation is prohibited in the Monument.

The primary factor associated with forest management that is likely to cause cumulative impacts is timber harvesting. The management plan will not cause significant adverse cumulative impacts related to timber harvesting. The 100-year projections of forest habitat conditions for the management plan show that the acreage of different habitat types on Mountain Home will not diminish over time. Mountain Home's forest management activities will continue to provide a diversity of forest stands and habitat types of various seral stages and provide connectivity of these habitats within the assessment area. The planned harvests at Mountain Home will be separated in time and distance. Standing biomass is expected to continue to increase over the planning interval, as the planned harvest level in the management plan is substantially less than annual growth. Timber harvest is statutorily prohibited within the Giant Sequoia National Monument. The management plan related impacts when added to the other projects in the vicinity of Mountain Home will therefore not result in significant adverse cumulative impacts.

Other activities associated with forest management include site preparation, burning, planting, vegetation control possibly using pesticides, precommercial thinning and road maintenance. The project will not cause adverse cumulative impacts from road maintenance. The Mountain Home management plan contains a systematic protocol for avoiding road related cumulative impacts over time and distance. Road construction and maintenance in the Giant Sequoia National Monument is minimal.

The project will not cause significant cumulative impacts from the use of pesticides. Pesticides uses related to different control projects are separated in time and distance so that their individual effects do not reinforce or interact with each other. Forestry pesticide uses on Mountain Home are substantially less in both frequency and amount than in agricultural or urban settings. Pesticide use under the Plan is neither widespread nor frequent. Pesticide use may be used for demonstration or research purposes, or for the establishment, survival, and improved

growth of forest stands. Due to the prohibition of timber harvest in the Giant Sequoia National Monument, pesticide use is expected to be negligible.

Given the low intensity and dispersed nature of site preparation, burning, planting, vegetation control and precommercial thinning activities both at MHDSF and in the Giant Sequoia National Monument, significant cumulative impacts would not occur.

The project will not cause significant cumulative impacts from research and demonstration studies. Research and demonstration installations are most often non-interventional and of a size and density that they will not likely create a significant adverse environmental impact. Research and demonstration activities in the Giant Sequoia National Monument are expected to be negligible.

Discussion and Conclusions

Cumulative impacts resulting from the project will be less than significant. The above analysis of resource values illustrate how the assessment area watersheds are stable landscapes, and land management activities continue to be conservative and dispersed over time and space for both major landowners within the assessment area. Forest management activities at Mountain Home over the last several decades have not resulted in significant adverse cumulative impacts. The proposed project proposes no substantial changes in the management of Mountain Home. The planned silviculture will continue to maintain a landscape that is varied and has a mixture of various timber stand types and wildlife habitats. The conservation emphasis of the Giant Sequoia National Monument will result in maintenance of existing ecosystem characteristics for the foreseeable future.

Possible site specific impacts are addressed on a project by project basis. The development of THPs or other CEQA projects under the guidance of this management plan are subject to separate cumulative effects analysis consistent with CEQA. The analysis is conducted based on the project's specifications and current or reasonably foreseeable future projects within the assessment area.

c) Would the project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?

Less than significant. No project related environmental effects were identified that would cause a substantial adverse effect on humans. As described herein, the proposed project has the potential to impact hazardous materials. However, with the adherence to all applicable laws and regulations, obtaining the appropriate permits, and the implementation of mitigations described herein, these impacts would be reduced to a less than significant level.

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Appendix 1

Potential Wildlife Species & Associated Habitats at Mountain Home.

Common Name	Species Name	Status	Habitat Types and Range	Species or Suitable Habitat Present
MAMMALS				
California wolverine	*Gulo gulo*	ST, FP	Generalist; remote, high elevation habitats; forest, meadow, rocky.	Historic occurrences nearby, suitable habitat present
Pacific fisher	*Martes pennanti*	FC	Mature forested habitats with hardwoods, snags, and LWD.	Known to occur, suitable habitat present
American (pine) marten	*Martes iparian sierra*	Native fur-bearer	Mature forested habitats with snags, rock outcrops, and LWD.	Known to occur, suitable habitat present
Southwestern river otter	*Lontra canadensis sonora*	SSC	Perennial streams with well-developed riparian and aquatic components (forage/denning)	Marginal habitat present
Sierra Nevada red fox	*Vulpes vulpes necator*	ST	Generalist; remote, high elevation habitats; forest, meadow, rocky.	Historic occurrences nearby, suitable habitat present
Mountain lion	*Felis concolor*	Protected	Generalist; remote, high elevation habitats; forest, meadow, rocky	Known to occur, suitable habitat present
Bobcat	*Felis rufus*	SSC	Boreal zone riparian, deciduous thickets; often near meadows	Known to occur, suitable habitat present
Black bear	*Ursus americanus*	Harvest	Mid-elevation shrubby/ forested habitats with rocky and iparian areas	Known to occur, suitable habitat present
Ring-tailed cat	*Bassariscus astutus*	FP	Dense forest & shrubby riparian habitats with friable soils; dens in burrows	Known to occur, suitable habitat present
Sierra Nevada snowshoe hare	*Lepus americanus tahoensis*	SSC	Generalist; caves and thickets used for denning	Known to occur, suitable habitat present
Townsend's big-eared bat	*Corynorhinus townsendii*	SSC	Mesic habitats; roosts/dens in mines, caves, or vacant buildings, maternity roosts sensitive	Known to occur, suitable habitat present
Spotted bat	*Euderma maculatum*	SSC	Deserts to forests; likely roosts in rock crevices, maternity roosts sensitive	Known to occur, suitable habitat present
Pallid bat	*Antrozous pallidus*	SSC	Low to mid-elevation riparian habitats; roosts in trees, bridges, buildings; maternity roosts senstive	Known to occur, suitable habitat present
Red Bat	*Lasiurus borealis*	SSC	Mature riparian hardwood forests; cottonwood; maternity roosts senstive	Known to occur, suitable habitat present
Long-legged myotis	*Myotis volans*	SSC 1998 proposed	Mixed conifer & giant sequoia forest habitats; tree & rock crevice roosts	Known to occur, suitable habitat present
Fringed bat	*Myotis thysanodes*	SSC 1998	Mixed conifer & giant sequoia	Known to occur, suitable

		proposed	forest habitats	habitat present
Silver-haired bat	*Lasionycteris noctivagans*	1998 WL proposed	Mixed conifer habitats w/black oak component; roosts in crevices and snags	Known to occur, suitable habitat present
Hoary bat	*Lasiurus cinereus*	1998 WL proposed	Conifer and deciduous hardwood habitats; generally roosts in foliage	Known to occur, suitable habitat present
Long-eared myotis	*Myotis evotis*	1998 WL proposed	Mixed conifer habitats w/black oak component; roosts under bark, hollow trees, rock crevices & soil fissures.	Known to occur, suitable habitat present
Badger	*Taxidea taxus*	1998 WL proposed	Open areas and forest edges with porous soils for dens	Known to occur nearby, suitable habitat present
Black-tailed deer (migratory)	*Odocoileus hemionus columbianus*	Harvest	Generalist; Beds down in dense forest thickets, hollows, and retention areas	Known to occur, suitable habitat present
BIRDS				
California condor	*Gymnogyps californianus*	FE, SE	Rocky, shrub or mixed conifer habitats, cliff nesting sites & tall open-branched trees/snags for roosting	No suitable nesting habitat present
Great gray owl (nesting)	*Strix nebulosa*	SE	Forests near meadows; nests in broken-topped snags/trees.	Suitable habitat present
Golden eagle (nesting/wintering)	*Aquila chrysaetos*	BOF, SSC	Nests in large trees or cliffs near expansive open habitats.	Known to occur, suitable habitat present
Northern goshawk (nesting)	*Accipiter gentilis*	BOF, SSC	Nests in mature mixed conifer stands with an open understory.	Known to occur, suitable habitat present
Willow flycatcher (nesting)	*Empidonax traillii*	SE	Willow/alder thickets in wet meadows and along watercourses.	No suitable habitat present
Bank swallow		ST	Nests in sandy banks along streams	No suitable habitat present
Cooper's hawk (nesting)	*Accipiter cooperii*	WL	Nests in dense conifer stands, mixed forests, and riparian areas.	Known to occur, suitable habitat present
Sharp-shinned hawk (nesting)	*Accipiter striatus*	WL	Early to mid-seral forest and riparian zones.	Known to occur, suitable habitat present
American peregrine falcon (nesting)	*Falco peregrinum anatum*	FP, FD	Nests on cliffs and high ledges near open areas.	No suitable nesting habitat present
Flammulated owl (nesting)	*Otus flammeolus*	WL	Forests with snags and openings; nests in cavity in live or dead trees.	Known to occur, suitable habitat present
California spotted owl (nesting)	*Strix occidentalis occidentalis*	SSC	Mature conifer forests; nests in abandoned cavity/platform in trees.	Known to occur, suitable habitat present
Long-eared owl	*Asio otus*	SSC	Riparian areas and dense live oak stands near meadow edges.	Suitable habitat present
Pileated woodpecker	*Dryocopus pileatus*	WL	Forested habitats with numerous large snags, logs, and stumps.	Known to occur, suitable habitat present

AMPHIBIANS				
California red-legged frog	*Rana draytonii*	FT, SSC	Ponds, marshes, and streams.	Extirpated from Tulare County
Sierra Madre yellow-legged frog	*Rana muscosa*	SSC	Mountain streams, lakes, and ponds above 5900' elevation.	Suitable habitat present
Foothill yellow-legged frog	*Rana boylii*	SSC	Streams and rivers, sea level to 5,800 feet.	Suitable habitat present
FISH				
Little Kern golden trout; critical habitat	*Oncorhynchus aguabonita whitei*	FT, FX	Perennial stream tributaries to the Little Kern River	No suitable habitat present
California (Volcano Creek) golden trout	*Oncorhynchus mykiss aguabonita*	SSC	Native to high elevation tributaries of the Kern River – also high elevation lakes of the Sierra Nevada Mts.	No suitable habitat present

FT = Federally Threatened; SE = State Endangered; ST = State Threatened; FC = Candidate for Federal listing as Threatened or Endangered; BOF = Board of Forestry Sensitive, Title 14 CCR 898.2(d); FP = Fully Protected (Title 14 CCR 3511or 4700; SSC = California Species of Special Concern. Federal listing refers to Central Valley ESU: Sacramento River and tributaries.

Appendix 2

Mountain Home State Forest Plant Scoping Assessment: December 9, 2009
4807 Acres, Moses Mtn, Camp Wishon, Camp Nelson, Quinn Peak Quads
CAL FIRE Forester (Jim Kral #2588)
T 19N R30E Sections 25, 26, 34, 35 & 36
T 19N R31E Sections 18, 19, 20, 28, 29, 30, & 31
T 20N R30E Sections 1, 2, & 12
Elevation 4800-7600 feet (1500 – 2375 meters)

Summary Assessment: CNPS 16-quad scoping for the proposed THP identified 40 special status plant species (CEQA Section 15380) that have the potential to occur within the project area (Table 1). Analysis of available data on habitat types and soil types (Tables 2 and 3) that are present or may be present within the MHDSF indicate that suitable habitat for 26 species may be present within the project area (Table 4).

Summary of Rare Species observed on site: Yes – CNDDB occurrence of *Erigeron inornatus spp. keilii, Fritillaria bradegeei* and *Calochortus westonii* in or immediately adjacent to MHDSF, *Clarkia springvillensis, Erythronium pusaterii,* and *Oreonana purparescens* are adjacent to MHDSF.

Site Summary: The Mountain Home Demonstration State Forest (MHDSF) is in an area of high native plant diversity. A 12 quadrangle search centered on the MHDSF determined that 40 CNPS List 1B, List 2 and listed species are found in the region. Suitable habitats include meadows, seeps, riparian, and coniferous forest – often on granitic soils – between 1500 and 2375 meters in elevation.

Table 1. Special Status Plants from a 9-quad search centered on the above listed quad (CNPS, CNDDB)

1	Scientific/Common/Rank	Life Form	Bloom	Communities	Elev
Y	Northern spleenwort *Asplenium septentrionale* List 2.3	Per. herb	Jul-Aug	•Chaparral •Subalpine coniferous forest •Lower/Upper montane coniferous forest /rocky, granitic	1615 - 3350 m
n	Kern Plateau milk-vetch *Astragalus lentiginosus var. kernensis* List 1B.2	Per. herb	Jun-Jul	•Meadows and seeps •Subalpine coniferous forest /sandy	2240 - 2750 m
y	Shevock's milk-vetch *Astragalus shevockii* List 1B.3	Per. herb	Jun-Jul	•Upper montane coniferous forest (granitic, sandy)	1890 - 1965 m
n	Kaweah brodiaea *Brodiaea insignis* List 1B.2 CA Endangered	Bulb	Apr-Jun	•Cismontane woodland •Meadows and seeps •Valley and foothill grassland /granitic or clay	150 - 1400 m
y	Shirley Meadows star-tulip *Calochortus westonii* List 1B.2	Bulb	May-Jun	•Broadleafed upland forest •Lower montane coniferous forest •Meadows and seeps /granitic	1500 - 2105 m
y	Berry's morning-glory *Calystegia malacophylla var. berryi* List 3.3	Per. herb	Jul-Aug	•Chaparral •Lower montane coniferous forest	610 - 2440 m
y	Muir's tarplant *Carlquistia muirii*	Per. herb	Jul-Aug	•Chaparral (montane) •Lower/Upper montane coniferous	1100 - 2500 m

1	Scientific/Common/Rank	Life Form	Bloom	Communities	Elev
	List 1B.3			forest /granitic	
y	Bolander's woodreed *Cinna bolanderi* List 1B.2	Per. herb	Jul-Sep	•Meadows and seeps •Upper montane coniferous forest /mesic, streamsides	1670 - 2440 m
n	Springville clarkia *Clarkia springvillensis* List 1B.2 CA Endangered, Fed Thr	Ann. herb	May-Jul	•Chaparral •Cismontane woodland •Valley and foothill grassland /granitic	245 - 1220 m
y	Tulare cryptantha *Cryptantha incana* List 1B.3	Ann. herb	Jun-Aug	•Lower montane coniferous forest (gravelly or rocky)	1430 - 2150 m
n	Rose-flowered larkspur *Delphinium purpusii* List 1B.3	Per. herb	Apr-May	•Chaparral •Cismontane woodland •Pinyon and juniper woodland /rocky, often carbonate	300 - 1340 m
n	Mineral King draba *Draba cruciata* List 1B.3	Per. herb	Jun-Aug	•Subalpine coniferous forest (gravelly)	2500 - 3315 m
n	Mt. Whitney draba *Draba sharsmithii* List 1B.3	Per. herb	Jul-Aug	•Alpine boulder and rock field •Subalpine coniferous forest	3300 - 3960 m
n	Pierpoint Springs dudleya *Dudleya cymosa ssp. costafolia* List 1B.2	Per. herb	May-Jul	•Chaparral •Cismontane woodland /carbonate	1435 - 1600 m
y	Hall's daisy *Erigeron aequifolius* List 1B.3	Per. herb	Jul-Aug	•Broadleafed upland forest •Pinyon and juniper woodland •Lower/Upper montane coniferous forest /rocky, granitic	1500 - 2440 m
y	Keil's daisy *Erigeron inornatus var. keilii* List 1B.3	Per. herb	Jun-Sep	•Lower montane coniferous forest •Meadows and seeps	1800 - 2200 m
y	Kern River daisy *Erigeron multiceps* List 1B.2	Per. herb	Jun-Sep	•Meadows and seeps •Upper montane coniferous forest (openings)	1500 - 2500 m
n	Mouse buckwheat *Eriogonum nudum var. murinum* List 1B.2	Per. herb	Jun-Nov	•Chaparral •Cismontane woodland •Valley and foothill grassland /sandy	365 - 1130 m
y	Twisselmann's buckwheat *Eriogonum twisselmannii* List 1B.2 CA Rare	Per. herb	Jul-Sep	•Upper montane coniferous forest (granitic)	2375 - 2805 m
n	Spiny-sepaled button-celery *Eryngium spinosepalum* List 1B.2	Ann./Per. herb	Apr-May	•Valley and foothill grassland •Vernal pools	80 - 255 m
?	Kaweah fawn lily *Erythronium pusaterii* List 1B.3	Bulb	May-Jul	•Meadows and seeps •Subalpine coniferous forest /granitic or metamorphic	2100 - 2775 m
y	Greenhorn fritillary *Fritillaria brandegeei* List 1B.3	Bulb	Apr-Jun	•Lower montane coniferous forest (granitic)	1415 - 2100 m

1	Scientific/Common/Rank	Life Form	Bloom	Communities	Elev
n	Pygmy hulsea *Hulsea vestita ssp. pygmaea* List 1B.3	Per. herb	Jun-Oct	•Alpine boulder and rock field •Subalpine coniferous forest /granitic, gravelly	2835 - 3900 m
n	Munz's iris *Iris munzii* List 1B.3	Per. herb	Mar-Apr	•Cismontane woodland	305 - 800 m
y	Field ivesia *Ivesia campestris* List 1B.2	Per. herb	Jun-Aug	•Meadows and seeps (edges) •Subalpine coniferous forest •Upper montane coniferous forest	1975 - 3350 m
?	Knotted rush *Juncus nodosus* List 2.3	Per. herb	Jul-Sep	•Meadows and seeps (mesic) •Marshes and swamps (lake margins)	30 - 1980 m
n	Madera leptosiphon *Leptosiphon serrulatus* List 1B.2	Ann. herb	Apr-May	•Cismontane woodland •Lower montane coniferous forest	300 - 1300 m
y	Yosemite lewisia *Lewisia disepala* List 1B.2	Per. herb	Mar-Jun	•Pinyon and juniper woodland •Lower/Upper montane coniferous forest /granitic, sandy	1035 - 3500 m
y	Copper-flowered bird's-foot trefoil *Lotus oblongifolius var. cupreus* List 1B.3	Per. herb	Jun-Aug	•Meadows and seeps (edges) •Upper montane coniferous forest /mesic	2400 - 2750 m
y	Hockett Meadows lupine *Lupinus lepidus var. culbertsonii* List 1B.3	Per. herb	Jul-Aug	•Meadows and seeps •Upper montane coniferous forest (mesic, rocky)	2440 - 3000 m
y	Broad-nerved hump moss *Meesia uliginosa* List 2.2	moss	Oct	•Bogs and fens •Meadows and seeps •Subalpine coniferous forest •Upper montane coniferous forest /damp soil	1300 - 2804 m
n	Kaweah monkeyflower *Mimulus norrisii* List 1B.3	Ann. herb	Mar-May	•Chaparral •Cismontane woodland /carbonate, rocky	365 - 1300 m
y	Purple mountain-parsley *Oreonana purpurascens* List 1B.2	Per. herb	May-Jun	•Broadleafed upland forest •Subalpine coniferous forest •Upper montane coniferous forest /usually metamorphic	2395 - 2865 m
y	Marble rockmat *Petrophyton caespitosum ssp. acuminatum* List 1B.3	Evergreen shrub	Aug-Sep	•Lower/Upper montane coniferous forest /carbonate or granitic, rocky	1200 - 2300 m
n	Aromatic canyon gooseberry *Ribes menziesii var. ixoderme* List 1B.2	Deciduous shrub	Apr	•Chaparral •Cismontane woodland	610 - 1160 m
y	Sequoia gooseberry *Ribes tularense* List 1B.3	Deciduous shrub	May	•Lower/Upper montane coniferous forest	1500 - 2075 m
y	Cut-leaf checkerbloom *Sidalcea multifida* List 2.3	Per. herb	May-Sep	•Great Basin scrub •Lower montane coniferous forest •Meadows and seeps	1750 - 2800 m

1	Scientific/Common/Rank	Life Form	Bloom	Communities	Elev
				•Pinyon and juniper woodland	
?	Prairie wedge grass *Sphenopholis obtusata* List 2.2	Per. herb	Apr-Jul	•Cismontane woodland •Meadows and seeps /mesic	300 - 2000 m
?	Marsh arrow-grass *Triglochin palustris* List 2.3	Per. herb	Jul-Aug	•Meadows and seeps •Marshes and swamps (freshwater) •Subalpine coniferous forest /mesic	2285 - 3700 m
y	Grey-leaved violet *Viola pinetorum ssp. grisea* List 1B.3	Per. herb	Apr-Jul	•Meadows and seeps •Subalpine coniferous forest •Upper montane coniferous forest	1500 - 3400 m

Mitigation Monitoring and Reporting Plan

for the

Mountain Home Demonstration State Forest 2009 Revised Management Plan

Initial Study/Mitigated Negative Declaration

State Clearinghouse # 2010011029

Tulare County, California

In accordance with CEQA Guidelines Section 15074(d), when adopting a mitigated negative declaration, the lead agency will adopt a Mitigation Monitoring and Reporting Plan (MMRP) that ensures compliance with mitigation measures required for project approval. The Board of Forestry and Fire Protection (Board) is the lead agency for the above-listed project and has developed this MMRP as a part of the final Initial Study/Mitigated Negative Declaration (IS/MND) supporting the project.

This MMRP accomplishes the following:

A. Lists the mitigation measures developed in the IS/MND designed to reduce environmental impacts to a less-than-significant level.

B. Identifies the party responsible for implementing the mitigation measure.

C. Defines when the mitigation measure must be implemented.

D. Identifies which party or public agency is responsible for ensuring compliance with the measure.

A. One of the findings of the IS/MND for the 2009 Mountain Home Demonstration State Forest Management Plan was that mitigation is required to reduce potentially significant impacts related to Biological Resources and Hazards and Hazardous Materials. The mitigation measures are:

Mitigation Measure #1: Utilize a wide range of management tools which will continue to maintain a landscape that is varied and has a mixture of various wildlife habitats. Mountain Home, as a multiple aged forest, including old growth giant sequoia, provides for a more biologically diverse habitat than is found in a predominantly young managed forest. The use of a variety of silvicultural systems will improve forest habitat by developing and maintaining a variety of crown levels, stand densities, and small openings in the forest. A management strategy of maintaining a variety of forest types and habitats provides a robust ecosystem that is resilient to disturbance and can mitigate impacts to less than significant.

Mitigation Measure #2: Maintain, restore, and enhance the occurrence of special habitat elements and unique habitats to promote species diversity and habitat quality. It is anticipated that potential project impacts will be less than significant on species identified as a candidate, sensitive, or special status species.

Mitigation Measure #3: Individual projects conducted under the guidance of this management plan will require a separate biological assessment based upon site-specific conditions. If during the project assessment, survey or project layout, species identified as candidate, sensitive, or special status or their habitats are identified, the management plan specifies that protection measures will be incorporated into the project. Protection measures will be developed in consultation with appropriate State or Federal wildlife agencies.

Mitigation Measure #4: Incorporate protection measures for all riparian areas or other sensitive natural communities, per the Forest Practice Rules.

Mitigation Measure #5: Protect all natural wetlands, springs and ponds on the Forest, per the Forest Practice Rules. Plan for additional pond construction where desirable.

Mitigation Measure #6: Consistent with the Forest Practice Rules, retain sufficient amounts of overstory and understory vegetation within watercourse protection zones so that water temperatures will not increase, and to provide other biological benefits. Allow for the natural recruitment of large woody debris to the stream channel to improve or maintain in-stream habitat quality and stream ecosystem function. Avoid deposition of any substances in streams or ponds that will degrade fish habitat. Design road crossings of fish-bearing streams to allow fish passage.

Mitigation Measure #7: Design forest management activities based on criteria that include horizontal and vertical forest structure, vegetation density, edge effect, corridor size, and biological diversity, in order to allow unrestricted movement of wildlife species.

Mitigation Measure #8: To ensure that all material is properly used, stored, and transported, Material Safety Data Sheets (MSDS), material labels, and any additional handling and emergency instruction of the materials are kept on file at the Mountain Home Demonstration State Forest Office.

Mitigation Measure #9: Any state employee handling these materials will be made aware of the potential hazards, given proper training and instruction, and also made aware of the location of the MSDS, and any other documentation for the material.

Mitigation Measure #10: All contractors used in the application or use of these hazardous materials shall have the appropriate licenses and be able to read and understand the MSDS, labels, appropriate recommendations, and application instructions.

Mitigation Measure #11: The storage of potentially hazardous materials on Mountain Home is in accordance to the MSDS and any buildings that are used for storage will display appropriate placards.

Implementation of these mitigation measures will reduce the environmental impacts of the proposed project to a less-than-significant level.

B. Cal Fire shall be the responsible party for implementing these 11 mitigation measures.

C. Biological mitigation measures shall be implemented continuously. Storage measures shall be implemented continuously. Application measures will be implemented during periods when potentially hazardous materials are being used.

D. Cal Fire is responsible for ensuring compliance with the mitigation measures described above.

Agency Representative:_____

Date:_____

The Board of Forestry and Fire Protection hereby adopts this MMRP:

_____

George Gentry Date

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Bakersfield Field Office
3801 Pegasus Drive
Bakersfield, California 93308-6873
www.ca.blm.gov/bakersfield

December 16, 2011

David Witt
5702 Danbury Ct.
Bakersfield, CA 93312

RE: Support of "Mountain Home Fuel Load Reduction Project" grant proposal.

The Bureau of Land Management, Bakersfield Field Office fully support the grant proposal for the "Mountain Home Fuel Load Reduction Project" submitted to the Sierra Nevada Conservancy by the Tulare County Resource Conservation District (RCD).

Our agency has been involved with the development of the Tulare County Community Wildfire Protection Plan (CWPP), a collaborative effort between the Tulare County RCD, Sequoia Fire Safe Council, local, state, and other federal government agencies. This project is a high-priority project identified in the CWPP, and will provide much-needed fire protection to the communities of Mountain Home.

Sincerely,

Ruth Ellison
Fire Mitigation and Education Specialist
Bureau of Land Management
Bakersfield Field Office

DEPARTMENT OF FORESTRY AND FIRE PROTECTION
1968 S. Lovers Lane, Visalia CA 93292
559-732-5954
Website: www.fire.ca.gov

December 6, 2011

David Witt
Tulare County Resource Conservation District
5350 W. Orchard Court
Visalia, California 93277

RE: Support of "Mountain Home Fuel Load Reduction Project" grant proposal.

Dear Mr. Witt:

CAL FIRE fully supports the grant proposal for "Mountain Home Fuel Load Reduction Project" submitted to the Sierra Nevada Conservancy by the Tulare County Resource Conservation District (RCD).

Our agency has been involved with the development of the Tulare County Community Wildfire Protection Plan (CWPP), a collaborative effort between the Tulare County RCD, Sequoia Fire Safe Council, and local, State, and Federal fire management agencies. Compliance with the California Environmental Quality Act (CEQA) is a critical first step towards implementation of the high-priority hazardous fuel reduction projects identified in the CWPP and in the grant proposal. These projects will provide much-needed fire protection for the communities of Tulare County.

Sincerely,

KIRK SWARTZLANDER
Unit Chief

SEQUOIA FIRE SAFE COUNCIL

24802 Avenue 236
LINDSAY, CA 93247-9727
Phone (559) 783-4148

December 5, 2011

The Sierra Nevada Conservancy
11521 Blocker Dr., Ste. 205
Auburn, CA 95603

Dear SNC:

This is to advise that the Sequoia Fire Safe Council fully supports the objectives and plan for the "Mountain Home Fuel Reduction Project".

The Sequoia Fire Safe Council has been working collaboratively with the Tulare Co. RCD, other land management agencies as well as land owners on projects identified in our region's Community Wildfire Protection Plan (CWPP). The "Mountain Home Fuel Reduction Project" is in keeping with this cooperative effort and represents the critical next step toward achieving CWPP goals.

The Sequoia FSC and their partners are working hard to reduce the impact of the inevitable in our forest lands. That inevitability is "wildfire". We would appreciate the SNC's consideration and support of this very worthwhile project.

Sincerely,

Robert S. Puls, President

United States Department of the Interior

U.S. FISH & WILDLIFE SERVICE
Pacific Southwest Region
NWRS – Fire Management Branch
2800 Cottage Way, W-2606
Sacramento, California 95825
(619) 468-9245 – Fax (619) 468-9249

December 16, 2011

The Sierra Nevada Conservancy
11521 Blocker Drive, Suite 205
Auburn, CA 95603

RE: Support of "Mountain Home Fuel Load Reduction Project" grant proposal

The U.S. Fish and Wildlife Service (USFWS) Pacific Southwest Region Fire Management Program fully supports the grant proposal for "Mountain Home Fuel Load Reduction Project" submitted to the Sierra Nevada Conservancy by the Tulare County Resource Conservation District (RCD).

Our agency has been involved with the development of the Tulare County Community Wildfire Protection Plan (CWPP), a collaborative effort between the Tulare County RCD, Sequoia Fire Safe Council, and local, State, and Federal fire management agencies. The Mountain Home Project is one of the high-priority hazardous fuel reduction projects identified in the CWPP, and will provide much-needed fire protection for the Mountain Home community.

Sincerely,

James M. Roberts
Wildland-Urban Interface Coordinator
U.S. Fish & Wildlife Service
Southern California Fire Management Zone

Mountain Home Demonstration State Forest Management Plan

March 2, 2010

California Department of Forestry and Fire Protection
The Natural Resources Agency

James J. Kral
Forest Manager

CERTIFICATION by REGISTERED PROFESSIONAL FORESTER

pursuant to
California Code of Regulations
Title 14, §1602.1

I, James J. Kral, am responsible for the preparation of this Forest Management Plan for Mountain Home Demonstration State Forest.

_____
James J. Kral, RPF #2588

_____
Date

APPROVAL of FOREST MANAGEMENT PLAN
for
MOUNTAIN HOME DEMONSTRATION STATE FOREST

Approved by vote of the Board of Forestry and Fire Protection

_____
George Gentry, Executive Officer

_____
Date

Table of Contents

I. INTRODUCTION

The forests of the Sierra Nevada provide important values to Californians. They supply many of the public trust resources that we use and enjoy, including clean water, fish, wildlife, oxygen, and forest products such as paper, lumber, mushrooms, herbs and landscape materials. California's forests also provide an important destination for recreational activity.

The majority of public wildlands in California are set aside as reserves and parks to preserve rare ecosystems. Demonstration State Forests, by contrast, are public lands that by legislative mandate have a unique and distinctly different purpose from parks and wilderness areas. Demonstration State Forests are mandated by law to provide opportunities to conduct research, demonstration, and education on sustainable forestry practices. Demonstration State Forests are required to balance periodic timber harvest with public trust resource values such as recreation, watershed, wildlife, range and forage, fisheries, and aesthetic enjoyment.

The Demonstration State Forest system meets an important need to advance research and demonstration into sustainable forestry practices in a State with a large population that places high demands on forest lands for recreation, environmental protection and conversion to residential use. Given the often controversial role of timber production in California, the State Forests play an important role in helping maintain California's leadership as an innovator in creating solutions to difficult and controversial forest management problems.

The California Department of Forestry and Fire Protection (CAL FIRE) manages approximately 72,000 acres of Demonstration State Forests on behalf of the public. Mountain Home Demonstration State Forest, a 4,858-acre mixed conifer forest located in the southern Sierra Nevada in Tulare County, is 22 air miles northeast of Porterville, and is the third largest State Forest.

This document contains a management plan for Mountain Home. The management plan lays out the planned on-the-ground management on the Forest for the next five to ten years. It serves as a guide to Forest managers as well as a public disclosure of the management direction at Mountain Home.

Authority and Statutes

CAL FIRE is responsible for the management of Mountain Home on behalf of the public. The legislative authority for the State Forest System is contained in Public Resources Code (PRC) §4631-4658 and §4701-4703. Chapter 9 of Title 14 of the California Administrative Code contains rules and regulations governing recreational use and the sale of timber and other forest products.

The Public Resources Code provides that State Forests shall be in conformity with forest management practices designed to achieve maximum sustained production of high-quality forest products while giving consideration to values relating to recreation, watershed, wildlife, range and forage, fisheries, and aesthetic enjoyment. Specifically, this legislation also specifies that Mountain Home shall be maintained as a multiple use forest, primarily for public hunting, fishing, and recreation.

Guided by these statutes, the Board of Forestry and Fire Protection establishes policy which governs Mountain Home and other State Forests in more detail. The following are some highlights of Board policy direction:

Recreation is the primary land use on Mountain Home, i.e. timber production is subordinate to recreation.

The primary purpose of the State forest program is to conduct innovative demonstrations, experiments, and education in forest management. All State Forests land uses should serve this purpose in some way.

Jackson, Latour, Mountain Home, and Boggs Mountain State Forests are commercial timberland areas managed by professional foresters who conduct programs in timber management, recreation, demonstration, and investigation in conformance with detailed management plans. The Department will conduct regular periodic timber sales on Jackson, Latour, Boggs Mountain, and Mountain Home State Forests.

The Department will conduct a balanced program of demonstrations and investigations in silviculture, mensuration, logging methods, economics, hydrology, protection, and recreation; directed to the needs of the general public, small forest landowners, timber operators and the timber industry.

State forest timberlands will be managed on the sustained yield principle, defined as management which will achieve and maintain continuous timber production consistent with environmental constraints.

Economically and ecologically justifiable intensified forest management practices to increase total fiber production and timber quality will be pursued on the State forests. These practices will be designed and carried out for maximum applicability or demonstration values to private lands.

Management Plans for Boggs Mountain, Jackson, Latour, Mountain Home and Soquel Demonstration State Forests shall be prepared by the Department, with appropriate public review, for approval by the Board. The Department shall present to the Board a thorough review of each existing plan at least every five years. After each review, the Board may direct the Department either to continue management under the existing plan, to prepare amendments to the plan, or to prepare a new plan for public review and Board approval. The Department shall submit the requested amendments or plan to the Board within one year after each request. The Department shall continue management under existing plans with appropriate consideration for changes in law or regulation, until amendments or new plans are approved by the Board.

History of Mountain Home

Mountain Home Demonstration State Forest lies within the recorded domain of the Foothill Yokuts Indian group. The Yokuts are unique among the California natives in being divided into true tribes, each with its own name, dialect, and territory. One of these tribes was known as the Yaudanchi or Yawdanchi. Their principal territory was the North Fork of the Tule River, to the northeast of modern-day Springville. Mountain Home State Forest was part of this territory although other groups, including the western Mono, Paiute, and Tabatulabal had access to the area (Otter, 1963).

The high elevation dictated seasonal occupation, mainly in the summer. Aside from being a welcome retreat from the hot valley summers, the area around Mountain Home provided good food sources, such as black oak acorns and sugar pine nuts.

Very little is known about the origins of the Yawdanchi or their use of the upper mountains. They were the last Native Americans to occupy the area, but not the only ones to do so. The mysterious prehistoric cultures that preceded them are known only through archeological investigations.

The 22 prehistoric and 14 historic sites recorded on Mountain Home attest to the long period of human occupancy there. The prehistoric sites consist of bedrock mortars and basins, lithic scatters, and combinations of the three. The bedrock basins and associated archeological remains found at Mountain Home are some of the most enigmatic phenomena in the Sierra Nevada, and are unique from a worldwide perspective. Additional undiscovered sites are thought to occur throughout the forest.

The historic Euro-American sites consist mainly of early sawmill remains and trees and stumps with historic markings. The Mountain Home Tract has a long history of timbering and recreational use. People would come up to get relief from the heat of the San Joaquin Valley in the summer, hence the name "Mountain Home."

Logging began adjacent to the State Forest in the Happy Camp area about 1870 with the Rand-Haughton Mill. However, very little acreage was cut over until A. M. Coburn and L. B. Frasier built mills on Bear Creek in 1885. Records indicate the Coburn and Frasier mills could cut 20 MBF and 40 MBF per day respectively. Records also show Frasier was in financial trouble from the start. The Tule River Lumber Company became owners of the Frasier Mill and surrounding property in 1890.

Yellow and white pine were the primary species that were harvested at Mountain Home until around 1900. It was during this period when the Enterprise Mill constructed a log skidway and began logging the giant sequoia from about 100 acres. The Elster Mill, which operated from 1903-1905, was the last of the early mills to operate on the forest. Virtually no harvest activity occurred from 1905 until the late 1930's.

In the early 1940's, old growth sequoia were subject to accelerated harvesting throughout the southern Sierra Nevada. The rapid rate of sequoia harvesting instilled growing concern from local residents who believed that in little time there would be few of the giants remaining. In the Fresno-Visalia area, the Native Sons and Daughters of the Golden West made a special project of saving the mammoth trees of the Mountain Home Tract[1]. As a result of their efforts, the California State Legislature passed the enabling legislation for the purchase of the Mountain Home Tract under Senate Bill 934 in 1945. In 1946, the owners sold the Mountain Home Tract to the State of California for $548,762.

Shortly after State acquisition in 1946, the first pack station lease was signed. Visitors to the forest tended to congregate in specific areas and in 1963 construction of the Frasier Mill Campground began. By 1979, all of the campgrounds in use at Mountain Home were finished. There have been some expansions done in a number of the campgrounds since then.

Due to the unique nature of Mountain Home, particularly the presence of old growth giant sequoia, it has been subject to many demonstration projects not available on the other Demonstration State Forests. Numerous samples of fallen behemoths have been collected from the Forest and shipped around the world for use as exhibits. In 1952 a large sequoia round was sent to the Swedish Museum of Natural History. A year after the "Los Angeles" tree fell across the Camp Lena Road, a 17 foot diameter section was sent to the Los Angeles County Fairgrounds as a permanent exhibit in 1961. Also in 1961, a section of a windfelled giant sequoia was sent to the Geologic Museum at the University of Cologne in Germany. Additional segments were sent to Mooney Grove in Visalia. In 1980, a 16 foot diameter segment of sequoia was sent to Kobe, Japan to be displayed in a pavilllion called Portopia 81.

[1] This tract had been consolidated between 1890 and 1915 by the Tule River Lumber Company and the well-known Michigan lumberman, George Hume. This land was later controlled by the Michigan Trust Company.

Management Goals and Guidelines

The following is a list of overall management goals for Mountain Home, used to guide decision-making. No ranking of these goals is implied. All these goals are of equal importance. In making management decisions, a balance will therefore be sought in order to optimize as many of these goals as possible. More specific management guidelines have been developed from these goals. These guidelines are described under each subject category in this management plan. In addition, all the management goals and guidelines are compiled in appendix A, for ease of reference.

1. Provide for recreational opportunities as the primary use of the State Forest. Work toward expansion and improvement of existing facilities and the development of new recreational opportunities in suitable areas. Maintain the system of campgrounds, picnic areas, trails, and roads in such a manner as to provide for safe and enjoyable use by the public.

2. Maintain an inventory of cultural resources and provide for their protection. Encourage research and interpretive use of these sites.

3. Harvest timber under sustained yield management on all productive areas while maintaining or enhancing recreational values. Harvest timber by the most economical methods that will protect the environmental values and maintain productivity. Ensure prompt regeneration following cutting and maintain optimal stocking throughout the life of the stand. Protect old growth giant sequoia from fire, cutting, and logging damage, and encourage reproduction.

4. Promote research and demonstration on the Forest. Research and demonstration projects will be aimed at providing practical information for forest landowners who need to manage a host of forest resources, including but not limited to, wildlife, water, soil, sensitive plants, and timber. Efforts at MHDSF will provide an opportunity for neighboring landowners and agencies to observe the application of different silvicultural methods in practice. Due to limited staff resources, cooperative research projects will be sought with other public and private researchers who share a common interest and direction in forest management. This information will be made available to landowners and the public.

5. Improve fire safety and forest health and optimize the use of dead and down trees, slash, bark, cull logs, and pre-commerical thinning for fuelwood, posts, pulpwood, and other specialty products. Utilize dead and down giant sequoia while protecting the recreational and scientific value of selected specimens. Make cone collections to satisfy the needs of the State nursery system and sell the excess to private collectors.

6. Improve and maintain watershed protection through forest practices and erosion control efforts. Develop water sources and assure safe drinking water for use at administrative and recreational facilities.

7. Prevent site degradation by using erosion controls and soil conservation practices in all management activities.

8. Enhance the existing habitat for as many wildlife species as possible. Manage cover, food, and water to sustain or increase wildlife populations. Prevent the degradation of stream and pond habitat that is suitable for fish populations.

9. Manage the forest to maintain an aesthetically pleasing forest environment for the recreational visitor. Harvest timber strategically to increase the visibility of old growth giant sequoia. Improve aesthetics in high use areas and along roads by controlling the density of leave stands, treating slash promptly, and promoting rapid regeneration.

10. Continue the fire prevention program utilizing education, enforcement, patrol, vegetation management, fuelbreaks, pre-fire planning, and suppression.

11. Continue an aggressive pest management program to improve forest health and reduce tree mortality due to insects and diseases utilizing monitoring, established control methods, and stand sanitation.

12. Continue research into forest-based carbon sequestration and forest management techniques to promote forest adaptation and resiliency to climate change.

13. Develop and maintain a fire resilient landscape within the MHDSF to protect the forest, the habitat it contains and the waters from which it drains.

14. Investigate and implement societal preferences for giant seuoia management and conservation.

15. Research and demonstration on silvicultural methods to establish and promote sugar pine and giant sequoia.

16. Maintain as wide a range of seral stages and forest structure types as possible, from regeneration to old growth, open and closed stands, in order to maintain options for future management and research.

17. Foster the development of giant sequoia stands, both young growth and old growth, to a point that is reflective of current natural forest conditions in this region. Establishing a more natural species mix will in many cases require a dedicated effort to decreasing the white fir component of stands and cultivating giant sequoia and pine species. Desired forest structure will typically be that of low density, fire resistant stands.

II PROPERTY DESCRIPTION

Location

Mountain Home is located on the west slopes of the southern Sierra Nevadas, in eastern Tulare County, approximately twenty-two air miles north east of Porterville. As indicated on figure 1, forest land in this area of the State is predominantly federal lands, National Forests and National Parks. Mountain Home It is situated in the drainages of the North Fork and the North Fork of the Middle Fork of the Tule River (figure 2). Mountain Home is located in Sections 25, 26 and 34-36, Township 19 South, Range 30 East; Sections 18 - 20 and 28 - 31, Township 19 South, Range 31 East and Sections 1, 2 and 12, Township 20 South, Range 30 East, Mount Diablo Base and Meridian. It ranges in elevation from 4,800 to 7,600 feet with all aspects present. The Forest comprises a total of 4,858 acres.

An 80 acre parcel of land exists near the center of MHDSF in the E½, SW¼, Section 25, Township 19 South, Range 30 East, Mount Diablo Base and Meridian. MHDSF owns and actively manages this parcel. However, the Miller family, from which the parcel was obtained, maintains a recreational lease to camp on the property. The lease expires in 2013.

Regional Setting and Adjacent Ownerships

Owners adjacent to or within the boundaries of the State Forest include Tulare County Parks Department, U.S. Forest Service, and private individuals (figure 3). The 160-acres County-owned Balch Park lies almost entirely within the State Forest in Sections 1 and 36. Of the approximately 30 miles of exterior boundary on the forest, 24.5 miles are common with the U.S. Forest Service, three miles common with private owners, and 2.5 miles common with Tulare County.

In a regional context, Mountain Home's mandate as a working forest emphasizing sustainable forestry is an exception to the predominant land use. The vast majority of the giant sequoia forest type is federal land, on which active forest management currently only plays a very minor role (figure 1).

Mountain Home is surrounded on the north, east and south by the southern section of the Giant Sequoia National Monument (the northern section surrounds Grant Grove and other parts of Kings Canyon National Park). The 328,000 acre Monument was created by President Clinton on April 15, 2000. It is administered by the United States Forest Service as part of the Sequoia National Forest and includes 38 of the 39 Giant Sequoia groves that located in the Sequoia National Forest, about half of the sequoia groves currently in existence. The management objectives for the Monument includes ecological restoration. Timber production is explicitly excluded.

The Sequoia and Kings Canyon National Park is located approximately 50 miles north of Mountain Home. Mountain Home Demonstration State Forest shares a similar emphasis of protection of giant sequoias groves and management for public recreation and education, but unlike the Park, within the context of practicing sustainable forestry on a working forest. The Sequoia and Kings Canyon National Park has recently completed their Final General Management Plan and Comprehensive River Management Plan / Environmental Impact Statement. The plan establishes a 20-year vision for the park, as well as direction on the management of park lands within the corridors of the Middle and South Kings River and the North Fork of the Kern River. These rivers have been designated as part of the National Wild and Scenic Rivers system.

Climate

Mountain Home enjoys a Mediterranean climate characterized by warm dry summers and cold, wet winters. Average precipitation is estimated to be 42 inches per year with the majority falling in the form of snow. With the exception of sporadic and infrequent summer thunderstorms, the typical rainy season extends from November through April. April 1 average water content of snow at the Old Enterprise Mill Snow Course, at 6,600 feet, is 15.3 inches with an average snow depth of approximately 36.9 inches. The minimum winter temperature recorded at Mountain Home is 1° F. The maximum summer temperature on record is 90° F. Table one shows historical average monthly maximum and minimum temperatures at Mountain Home.

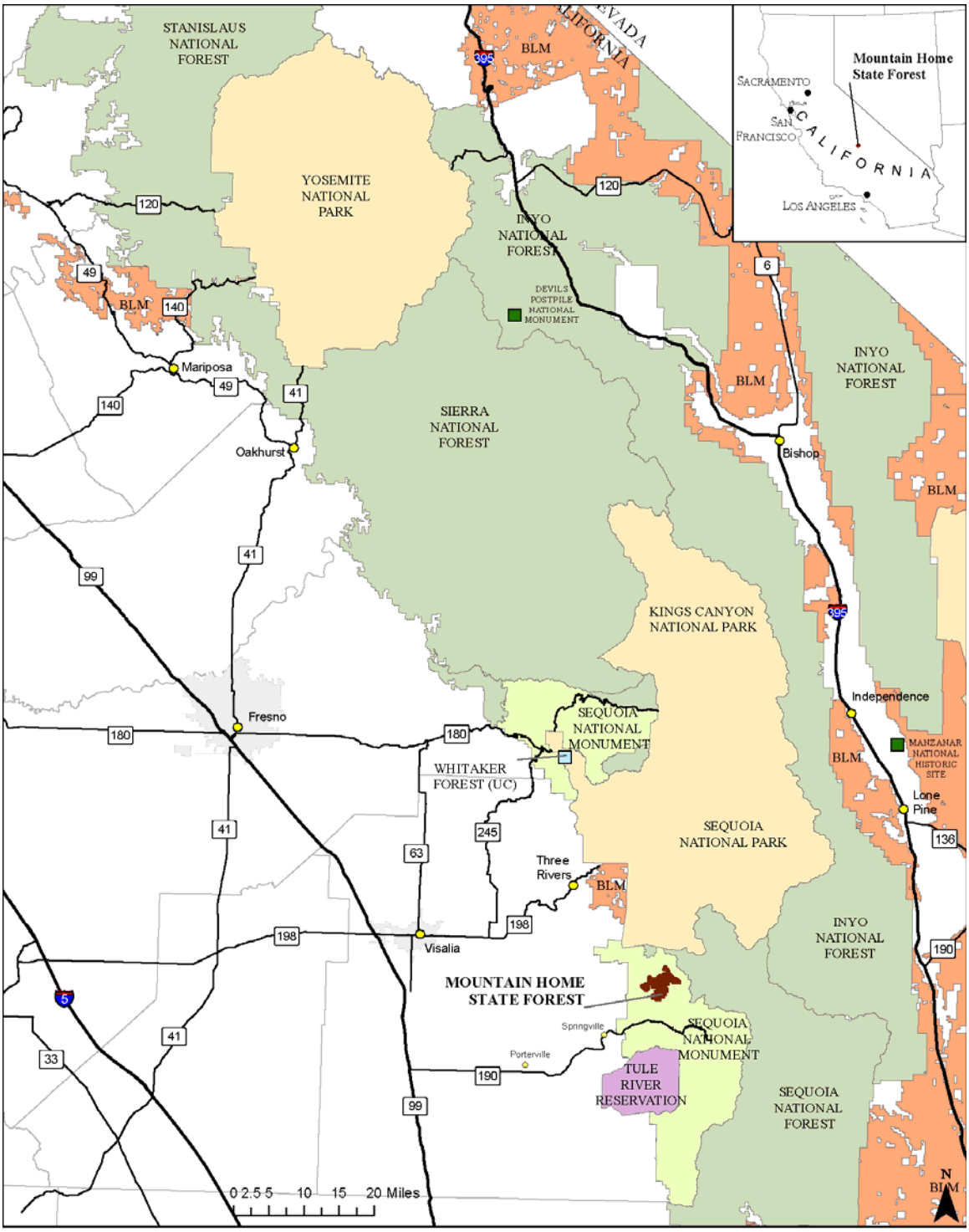

Figure 1. Location of Mountain Home Demonstration State Forest.

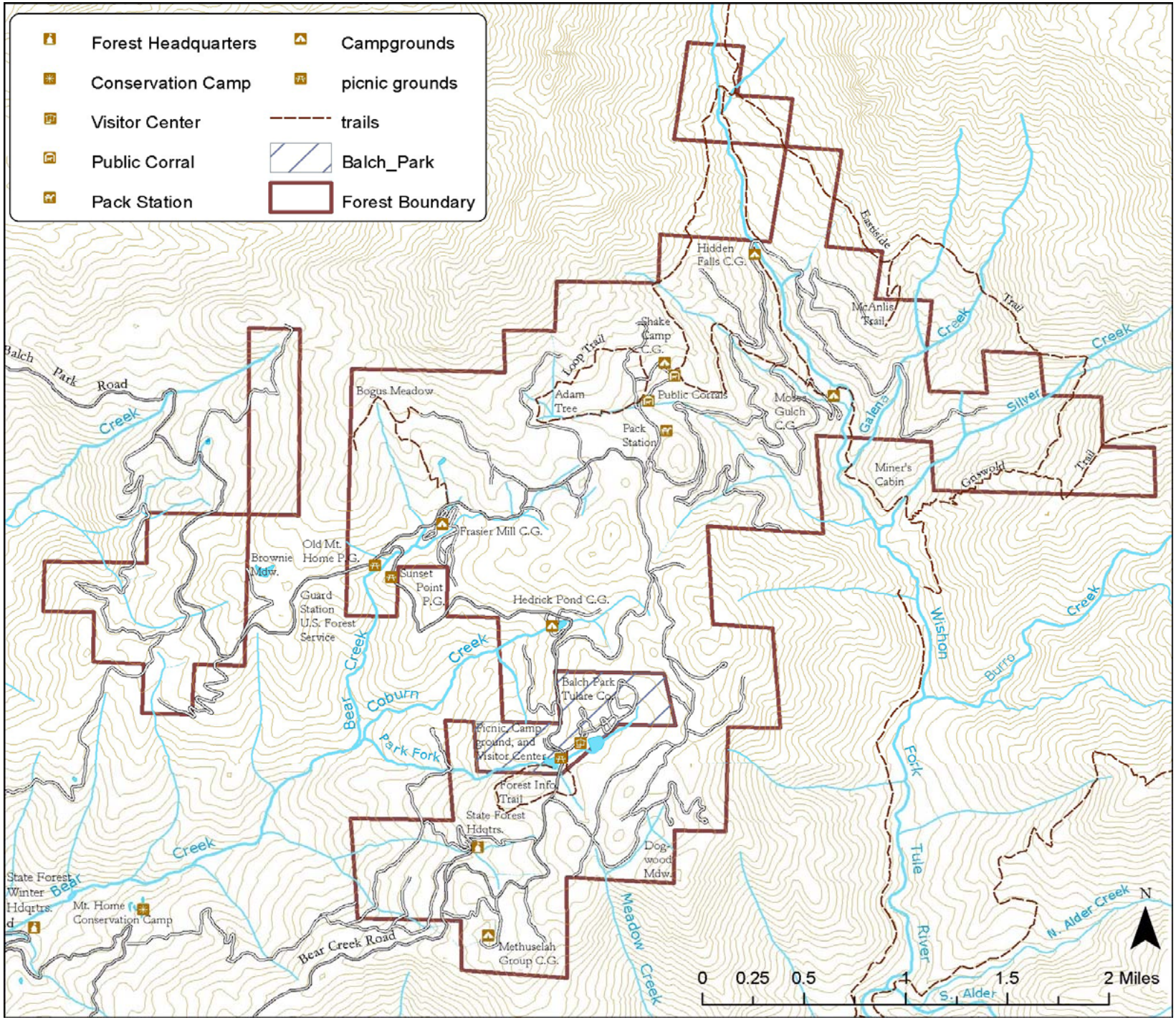

Figure 2. Mountain Home Demonstration State Forest ownership map.

Table 1. Average monthly maximum and minimum temperatures at Mountain Home (2002-2007).

Month	Maximum Temperature (°F)	Minimum Temperature (°F)
January	44	23
February	44	23
March	47	26
April	51	29
May	63	37
June	72	43
July	80	51
August	78	48
September	73	42
October	61	36
November	48	28
December	44	25

Soils

Approximately two-thirds of the State Forest area is underlain by granite-granodiorite, most of which is decomposed at the surface. The remaining one-third of the area is underlain by metamorphic rocks including schists, quartzite, slate, metavolcanic rocks, lime/silicate hornfels and limestone. The main ridge between the North Fork and the North Fork of the Middle Fork of the Tule River forms the rough dividing line between these two basic parent materials, with the granitics lying to the west of the ridge and the metamorphics to the east.

Known mineral commodities of possible economic value in the area include miscellaneous crushed rock, limestone, decomposed granite for road surfacing, complex copper-zinc ore with minor amounts of lead, silver, and gold, lead-zinc silver ore with minor amounts of gold and tungsten. All known occurrences of metallic minerals are restricted to the metamorphic rocks, particularly the limestone and limey horizons in the slates. Insufficient development work has been done on any mineral prospects in the area to determine whether ore is present in commercial quantities. The State holds all of the mineral rights on the State Forest and current policy prohibits prospecting by private individuals. Thirteen soil series have been identified on the State Forest area and are listed in table two below.

Table 2. Soil Series found on Mountain Home.

SOIL SERIES	PARENT MATERIAL	DESCRIPTION	COVER
Boomer	Greenstone	Gravelly loam	Pine, Mixed Conifer
Chaix	Granitic	Coarse, sandy loam	Mixed Conifer
Cieneba	Granitic	Fine, gravelly loam	Chaparral
Crouch	Crystalline igneous	Very coarse, sandy loam	Pine, Mixed Conifer
Dome	Granitic	Sandy loam (deep)	Pine, Fir
Heitz Taxa	Granitic	Gravelly, loamy, coarse sand	Pine
Holland	Quartz	Loam	Pine, Cedar
Holland Taxa	Quartz	Loam	Pine, Cedar
Marpa Variant	Shale	Very gravelly, heavy loam	Mixed Conifer
Sheetiron	Schist	Gravelly loam	Mixed Conifer
Sierra Variant 2	Granitic	Coarse, sandy loam	Grass, Oak, Pine
Tollhouse Variant	Granitic	Rocky, coarse, sandy loam	Chaparral, Oak

*Miscellaneous soil series include Childs, Cone, Decey and rock outcrops

The high site timber producing soils exhibit moderate to high erosion hazard ratings. Some of the more shallow granitic soils exhibit high to extreme erosion hazard particularly on steep slopes. Caution should be exercised when planning harvesting activities on slopes that exceed 50 percent where these soils are present.

Areas of geologic instability, such as slides and slumps, are generally associated with high amounts of surface water and springs. These areas should be avoided in harvesting and road construction. If these areas cannot feasibly be avoided, an engineering geologist shall be consulted to help mitigate disturbances.

Water Resources

Mountain Home encompasses five Calwater watersheds: Rancheria, Upper North Bear, Hossack, Silver, and Burro Creeks (figure 3). The forest is situated on the ridge that separates the North Fork of the Middle Fork of the Tule River (Wishon Fork) from the North Fork of the Tule River. The North Fork of the Middle Fork of the Tule River passes through the forest for approximately 1.5 miles of its length. Tributaries to the North Fork of the Tule River, which drain out of the forest, include Rancheria, Bear, and Hossack Creeks. Named tributaries to Bear Creek include Norway Creek, Coburn Creek, and Park Fork of Bear Creek. Named tributaries of the North Fork of the Middle Fork of the Tule River, which occur on State Forest land, include Moses Gulch, Galena Creek, Silver Creek, Burro Creek, and Shake Gulch.

The headwaters of Rancheria Creek are located on the Sequoia National Forest, approximately one-half mile north of Mountain Home. The Rancheria Creek watershed is 7,819.65 acres in size; Mountain Home contains approximately 400 acres or 5.12 percent. The lower reaches of Rancheria Creek and some of its unnamed tributaries are Class I (fish bearing) watercourses. The lowest reach of this watershed that occurs downstream of the confluence with Upper North Bear Creek is named Bear Creek. There are no Class I watercourses present within the bounds of Mountain Home in the Rancheria Creek watershed.

The headwaters of Upper North Bear Creek occur on Mountain Home at the topographic boundary that demarcates this watershed from Silver Creek, Burro Creek and Hossack Creek. The Upper North Bear Creek watershed is 8,638.07 acres in size; approximately 1,945 acres or

22.52 percent falls within Mountain Home. The Upper North Bear Creek watershed joins with Bear Creek approximately 4.5 miles below Mountain Home.

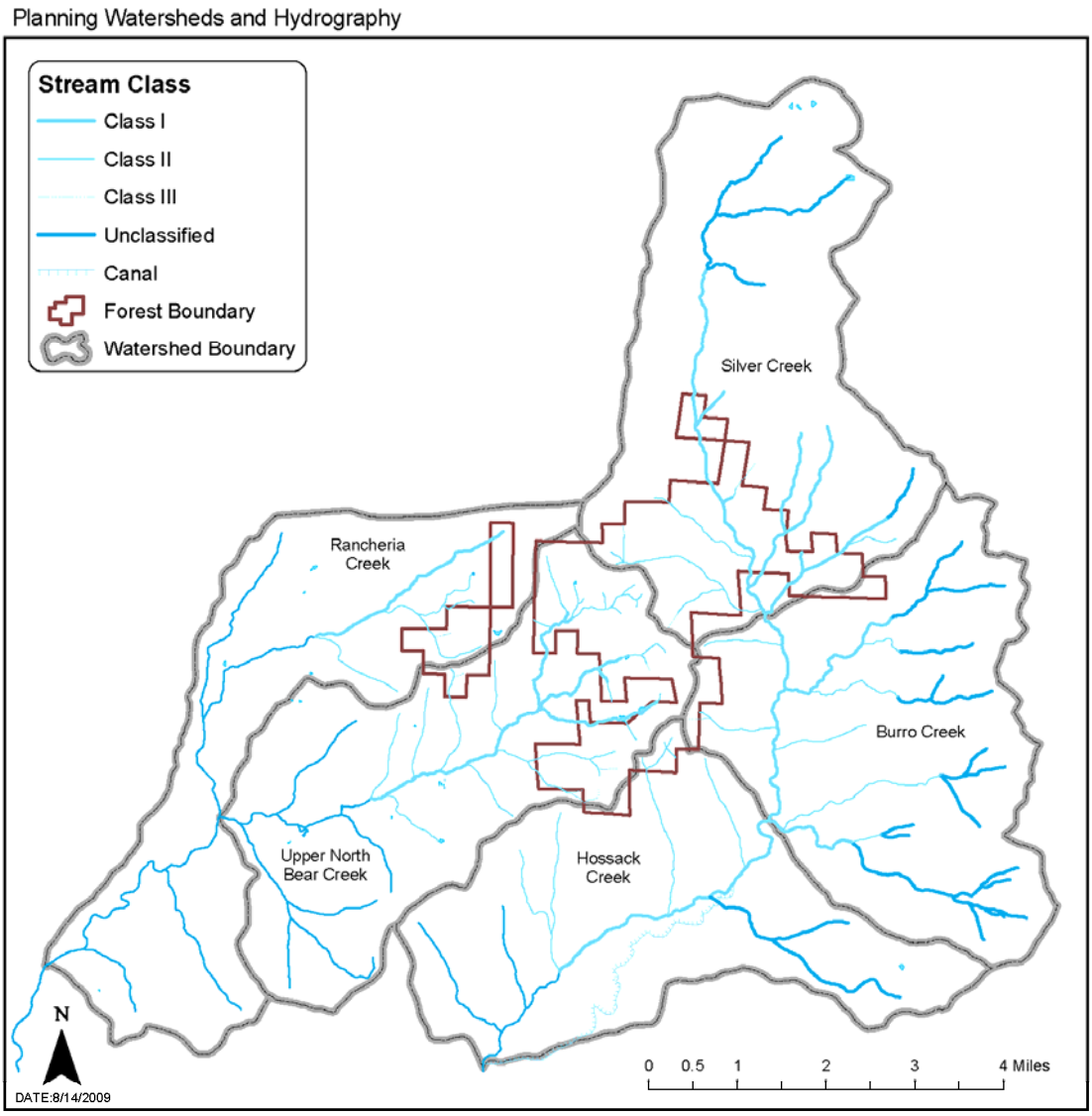

Figure 3. Planning watersheds covering Mountain Home Demonstration State Forest.

Named tributaries such as South Bear Creek and numerous unnamed tributaries of the Upper North Bear Creek watershed are Class I watercourses.

The Hossack Creek watershed lies south of the Upper North Fork Bear Creek and Burro Creek watersheds. The Hossack Creek watershed is 7,882.11 acres in size; approximately 181 acres or 2.3 percent is located on Mountain Home. Those Mountain Home lands located within this watershed are flat to gently sloping. There are no classifiable watercourses in this watershed located on Mountain Home land.

The headwaters of Silver Creek begin on the Sequoia National Forest about four miles north of Mountain Home. The Silver Creek watershed is 10,129.1 acres in size; 2,010 acres or 19.84 percent is within the boundaries of Mountain Home. The North Fork Tule River receives drainage from Galena Creek and Silver Creek, all of which, are Class I watercourses.

The Burro Creek watershed lies south of the Silver Creek watershed and begins just south of the confluence of Silver Creek and the Middle Fork Tule River. The Burro Creek watershed is 8,595.52 acres in size; approximately 272 acres or 3.16 percent occurs in Mountain Home. Those Mountain Home lands located within the bounds of this watershed are steep and inaccessible to ground based equipment. There are no Class I or II watercourses located on Mountain Home within this watershed, except the Middle Fork of the Tule River which is located in the Silver Creek drainage.

There are two man-made ponds on the Forest. Hedrick Pond, located near the center of Section 36, T19S, R30E, is an old mill pond constructed in 1939. Hedrick's sawmill was abandoned not long after State acquisition of the forest, but the pond remained and is now the focal point of a 14-unit campground. Hedrick Pond is near the headwaters of Coburn Creek, a tributary to Bear Creek. Another pond, located in the NE 1/4, Section 1, T20S, R30E, is partially on State Forest land and partially in Balch Park. It is commonly referred to as Upper Balch Pond. The pond was constructed in 1959 for recreational purposes. Balch Park campground is immediately adjacent to the pond on the north side.

Springs are common in many areas of the forest. Many of these springs have been developed for domestic water supplies for campgrounds, picnic areas, and administrative sites. Developed springs exist in the Shake Camp area, Frasier Mill, Hidden Falls, Hedrick Pond, and the State Forest Headquarters. All but one of these springs now feed into a network of horizontal wells that provide drinking water to recreational and administrative facilities while reducing the possibility of contamination.

Other springs are located throughout the Forest that provide unique habitats for wildlife. Many of the meadow areas at Mountain Home are the result of spring activity and marsh like conditions adjacent to watercourses. These areas provide habitat and ecological attributes not found elsewhere at Mountain Home.

Vegetation

There are two major commercial timber types found on Mountain Home, mixed conifer and true fir. The mixed conifer type is found at lower elevations on drier south and west facing slopes. The tree components of this type are giant sequoia (*Sequoiadendron giganteum*), ponderosa pine (*Pinus ponderosa*), sugar pine (*Pinus lambertiana*), white fir (*Abies concolor*) and incense-cedar (*Calocedrus decurrens*). Introduced Douglas-fir (*Pseudotsuga menziesii*) and some hybrid Jeffrey-Coulter pine occur in limited areas throughout the lower elevations of the forest. At the upper elevations Jeffrey pine (*Pinus jeffreyi*) replaces ponderosa and Shasta red fir (*Abies magnifica* var. *shastensis*) mixes with white fir. The major component of the mixed conifer type is white fir with second growth giant sequoia being a distant second.

The true fir type is found at the higher elevations particularly in the area of the old Enterprise Mill site. This type is characterized by almost pure even aged stands of white and red fir. Other species found in association with the true firs are sugar pine, Jeffrey pine and giant sequoia.

Small amounts of hardwoods found in association with these types include black oak (*Quercus kelloggii*), canyon live oak (*Quercus chrysolepsis*), interior live oak (*Quercus wislizenii*), white alder (*Alnus rhombifolia*), and Pacific dogwood (*Cornus nuttallii*).

Major components of the understory vegetation include mountain whitethorn (*Ceanothus cordulatus*), bearclover (*Chamaebatia foliolosa*), gooseberry (*Ribes roezlii*), currant (*Ribes nevadense*), California hazelnut (*Corylus cornuta* var. *californica*), bush chinquapin (*Castanopsis sempervirens*), dogwood (*Cornus nuttallii*), deerbrush (*Ceanothus integerrimus*), manzanita (*Arctostaphylos* spp.), bracken fern (*Pteridium aquilinum*), lotus (*Lotus* spp.), lupine (*Lupinus*. Spp.), snowberry (*Symphoricarpos albus*) and littleleaf ceanothus (*Ceanothus parvifolius*).

Old growth giant sequoia over 40 inches in diameter at breast height (DBH) occurs on approximately 56 percent of the total acreage of the forest. Recent inventory information estimates the total number of old growth giant sequoia trees at about 4,000.

Young growth giant sequoia is present in dense stands ranging in age from 1-110 years. The origin of these stands can be traced back to historical site disturbances, mainly logging. Many of these stands average 100 years in age corresponding to the early logging around 1900.

Improvements

Five multiple user and one group campground have been developed at Mountain Home. These campgrounds are semi-primitive, as the only developments are pit toilets, tables, bear-proof food lockers, potable water and stoves (campfire pits). All of the multi-unit campgrounds have spring-fed wells that collect water in tanks for gravity feed to a variety of spigots at each facility. Methuselah group camp does not have developed water.

The pack station located near Shake Camp is operated under a lease agreement with a local packer. This facility consists of a residence, tack room, loading dock, public toilet and three corrals. The water that supplies the pack station originates at the Shake Camp water tank.

There are two public corrals located between the pack station and Shake Camp campground. They are located near the trailhead that leads into the Golden Trout wilderness area. The corrals are supplied with potable water from the Shake Camp tank. There is ample parking available at each set of corrals to accommodate trucks and trailers.

The “House that Jack Built” otherwise known as “Jack’s Cabin” is a small, multi-room cabin located on the north bank of Bear Creek. It is used to house researchers and visiting foresters.

Mountain Home summer headquarters is used during the non-winter period. During the winter the headquarters is inaccessible due to snow. The headquarters consist of a small historic office/museum/information center, a four bedroom barracks with kitchen, a historic warehouse, a concrete building that houses the electrical system, a hazardous materials storage room, 1,000 gallon fuel tank and pump, a 500 gallon propane tank and two 15,000 gallon water tanks. The headquarters barracks provides housing for seasonal forestry aides and visiting researchers.

Mountain Home winter headquarters is located approximately seven miles below the forest on Bear Creek Road. This facility consists of an office building, a shop, two garages, and a residence. The residence was historically used by the Forest Manager or conservation camp Lieutenant. The residence was remodeled in 2008 and is currently being rented by the camp Lieutenant. Water for the winter headquarters is supplied by a well located at Mountain Home Conservation Camp.

The water tanks located at Mountain Home are used for domestic purposes and fire control.

Zoning

The entire Forest has been zoned as Timberland Production Zone (TPZ). This means the land is devoted to and used for growing and harvesting timber and compatible uses. Compatible use is defined as any use that does not detract from the use of the land for growing and harvesting timber. Compatible uses include watershed management, fish and wildlife habitat management, recreation, hunting and fishing, and grazing.

III. RECREATION

Facilities

This section describes existing recreation facilities at Mountain Home. Table 3 lists the camp grounds currently located on the Forest (see also figure 2). All campgrounds on the forest are rustic with accommodations for tent campers and small to medium sized, self-contained, recreational vehicles. A typical campsite consists of a stove / fire pit, table, bear-proof food locker, sign with site designation, and parking space. Within a short walking distance are garbage cans, pit toilets and potable water.

Table 3. Campgrounds on Mountain Home Demonstration State Forest.

Name	Number of Camp Sites	Year Built
Frasier Mill	49	1963
Hedrick Pond	14	1969
Hidden Falls	8	1971
Shake Camp	11	1975
Moses Gulch	10	1979

Hidden Falls and a portion of the Moses Gulch campgrounds contain walk-in sites where a parking space is provided a short distance from the actual campsite. Campground roads and parking spaces are native soil with crushed rock surfacing in most cases. All campsites are currently available free of charge on a first-come, first-served basis.

Group Campground – Methuselah

Methuselah Group Camp consists of a large parking area, pit toilets, fire ring, amphitheater, barbecue, and tables. Capacity of the area is approximately 100 people. The group camp is available on a reservation basis, currently free of charge and is in very high demand.

Handicapped Campsite – Frasier Mill Campground

A wheelchair accessible campsite, site C2, was constructed in the “C” loop of Frasier Mill Campground in 2002. This site includes a specially designed table, stove/firepit, bear-proof food locker, pit toilet and concrete parking pad. This site is specifically designated for handicapped use and is available by reservation only.

Picnic Areas – Old Mountain Home and Sunset Point

Old Mountain Home picnic area has most of the amenities of a campground; tables, barbeques, water, and pit toilets are present, but there are no food lockers. The Old Mountain Home site also serves as an overflow camping area when the other campgrounds are full. No campfires are allowed when the site is used for camping. Overnight camping is only allowed with permission of the State Forest Manager.

Sunset Point was converted to a picnic area in 1994 after an archaeological dig revealed the presence of a significant prehistoric Indian site. A self-guided interpretive trail was developed that is very popular with State Forest visitors.

The picnic areas are normally for day use only with no overnight camping permitted unless authorized by the State Forest Manager.

Overflow Areas

Camping overflow areas have been designated at Frasier Mill campground, Shake Camp campground, the Methuselah Group Camp, the Shake Camp public corral, and Old Mountain Home. These areas can be used for camping only when all regular campsites are totally occupied and with authorization of the State Forest Manager.

Balch Park Pack Station

The State maintains a pack station facility in the Shake Camp area that includes living quarters, a tack room, a public toilet, and corrals. The station is leased to a private concessionaire to provide a packing service to the public. Horses and pack stock can be rented for hour-long rides or for more extended trips into the backcountry.

Public Corrals

The State maintains two sets of public corrals in the Shake Camp area. The corrals are equipped with water and horse trailer parking is available adjacent to the corrals.

Trails

Currently, all trails on the Forest are for hiking or equestrian use. No motor vehicles are allowed on any of the trails. The trail system accesses various points within the State Forest (as described below) and leads from State land into the Sequoia National Monument's Golden Trout Wilderness Area.

Sunset Point – 0.1 Mile

This trail is an interpretive trail exemplifying the prehistory of the Mountain Home area. This area was subject to an archaeological excavation in 1991 while the site was being used as a public campground. The excavation resulted in the discovery of deep cultural deposits and the campground was subsequently closed in 1994. However, given the close proximity to Bear Creek Road and the presence of toilets and running water, the archaeological team determined that the best use for the site was a self-guided interpretive trail. The trail is a simple loop that accesses a large granite outcrop containing a number of bedrock mortars and basins commonly referred to as "Indian bathtubs." The trail is complete with signage that offers a brief interpretation of the area. A short spur trail accesses an overlook "Sunset Point" that provides a breathtaking view of the foothills and valley below. This site is a popular day use area that receives extensive use during the season.

Forestry Information Trail - 1 Mile

This trail is a self-guided interpretive walk that originates at Balch Park, leads into State Forest land, and loops back into Balch Park. A trail brochure is available at the trailhead; it describes the natural history and management activities in the area.

Loop Trail - 2 Miles

Beginning and ending at the public corrals, this trail is suitable for short day hikes or one-hour horseback rides. It leads through a beautiful giant sequoia / mixed conifer forest, and passes the Adam and Eve tree, Boxcar Rock, Indian bathtubs, 100-year-old giant sequoia stands, and harvested areas.

Redwood Crossing Trail - 2 Miles

This trail originates at the Shake Camp trailhead parking area and continues in and out of the State Forest until it enters the Golden Trout Wilderness area at Redwood Crossing. This trail represents a main access point into the Golden Trout Wilderness from the State Forest and leads into backcountry areas of the Sequoia National Forest and Sequoia National Park. Wilderness permits are required for traveling on this trail beyond Redwood Crossing. Forest staff no longer issues wilderness permits. They must be obtained from the US Forest Service office in Springville.

Eastside Trail - 3 Miles

This trail connects the Griswold trail with the Redwood Crossing trail at Redwood Crossing. The trail skirts along the northeast boundary of the State Forest running in and out of State land. This trail is recommended only for foot traffic because of creek crossings that are difficult for horses to negotiate.

McAnlis Trail – ½ Mile

This short trail consists of a spur that connects the upper McAnlis access road east of the North Fork of the Middle Fork of the Tule River with the Eastside Trail.

River Trail – 1½ Miles

The River Trail runs along the North Fork of the Middle Fork of the Tule River from Moses Gulch to Redwood Crossing. It is mainly used as a fisherman's trail.

Griswold Trail - 4 Miles

This trail originates at Shake Camp, leads down into the Tule River Canyon, crosses the North Fork of the Middle Fork of the Tule River at Moses Gulch, follows the river downstream to Silver Creek, then heads uphill to the east up a dry ridge where it leaves the State Forest and enters the Golden Trout Wilderness area. Eventual destinations include Maggie Lakes and the Little Kern River. Because of the steep, arduous, dry climb, the trail is not used extensively and is maintained infrequently, especially on the upper reaches.

Recreational Attractions

The extensive groves of old growth giant sequoia trees are a major attraction of Mountain Home Demonstration State Forest. Views of more than 4000 old - growth trees have been opened up by the harvesting activity that has taken place in the area since the late 1800's. No other public areas have comparable scenic vistas of old growth veterans. The young growth stands of giant sequoias and other species provide contrast to the old growth component.

Because of the early exploitation of the giant sequoias in the Mountain Home area, sites of historical interest abound. These sites include: historical stumps, trees, logs, sawmills, and old resort locations. The Forest also has many examples of prehistoric rock basins and Indian bedrock mortars which are of archaeological significance.

The two ponds on the State Forest are stocked with trout by the California Department of Fish and Game. These ponds are a major attraction to fishermen of all ages during the summer months. Fishing is also available in Bear Creek and the North Fork of the Middle Fork of the Tule River and its tributaries. The forest is open to hunting with the exception of a buffer area around campgrounds, Balch Park and the Forest Headquarters. Hunting is allowed in season for deer, bear, gray squirrels, quail, and grouse.

Trails leading out of the State Forest to the north and east eventually lead into the Golden Trout Wilderness Area. This increases the popularity of trailhead areas at Shake Camp and Moses

Gulch. The Balch Park Pack Station provides pack trips for individuals and groups into the Golden Trout Wilderness and other areas in the Sequoia National Forest and the Sequoia National Park.

Haughton's Cave

Haughton's Cave, also known as Crystal 67 Cave, is a major attraction to speleologists (cavers) in the Mountain Home area. The cave is reported to have one of the largest underground chambers in the west. Recent maps show the large underground "Mountain Room" to be 360 feet long and 130 feet wide at its widest point. Total explored depth is 415 feet, making it the fourth deepest cavern in California. The cave is accessible only through an underground stream channel with precipitous drops of up to 65 feet. This makes entrance dangerous for all but the most experienced speleologists. Entry is now controlled through a locked entrance gate by special permit. An inspection of equipment and waiver of liability are required for admission. Early studies showed that commercial opportunities existed for the cave if a new and easier entrance could be found into the "Mountain Room". At present, no such entrance has been identified. Other caves may exist in the limestone areas on the Forest as evidenced by numerous sinkholes and disappearing streams.

Future Development

Mountain Home Demonstration State Forest is committed to placing strong emphasis on recreation as the primary use of the area. Past decisions have been made to construct and maintain recreational facilities in a rustic condition and discourage commercial recreational development on the Forest.

Existing facilities continue to be adequate to meet public demand for camping facilities. Major campground expansion up to the present 92 sites was completed in 1976. The emphasis since then has been on maintenance of existing facilities.

Forest staff tracks demand for overnight camping on the State Forest. Based on the historical camper day figures, projected future camper day use are as follows:

Year	Estimated Camper Days
2010	38,682
2015	41,944
2020	45,207

These projected figures indicate an annual rate of increase of about 2 percent. Any estimation of future use is difficult, with diminishing accuracy the longer the projection is carried out. The Sequoia National Monument was established in 2000. It will undoubtedly increase recreational use of the State Forest in the future. The magnitude of this increase is unknown and will depend on the attractions favored by visitors to the Monument. Once the Monument Plan is finalized and approved, a better assessment of potential visitor use can be developed.

The existing recreational facilities can accommodate 30,000 - 40,000 camper days per year. When weather conditions allow, weekend recreational use tends to be near or over capacity from Memorial Day weekend through Labor Day. Weekday use is normally estimated to be around 25 percent of capacity. However, valley temperatures have the greatest influence on public use. When temperatures reach 100 degrees on the valley floor, public use spikes, even during the week.

Visitor demographics have changed from the historic patterns seen in previous years. In the past, the average user was a single family with one tent and vehicle. Use now is often by large extended families or unrelated groups that may require as many as six tents and five vehicles.

Construction of more group camps is planned; sites for potential additional campgrounds have been identified and are listed below.

In an effort to reduce traffic congestion, limits may also be set on the number of cars that can occupy a campsite. If this is done, larger groups will then need to occupy more camp sites, filling the campgrounds more often.

Currently, visitor use is concentrated between Memorial Day and Labor Day. In the last 30 years, deer season use during the month of October has seen a steady decline. This is a result of declining deer populations, reduced interest in hunting, and new hunting regulations restricting hunters to one area of the State in a given season. Further expected decreases in hunting season use, coupled with higher total visitor use, will concentrate the camping season into a shorter time frame each year. This will tend to saturate the recreational facilities at a lower total visitor use rate per season.

Another factor that will influence demand for State Forest recreational facilities is the availability of other recreation opportunities in the area. The only other campground in the immediate area is the County operated Balch Park. Demand for campsites at Balch Park has historically been higher than at State Forest campgrounds. Balch Park has undergone a steady expansion of its facilities and currently has 80 campsites. No additional expansion for Balch Park is planned. As utilization of Balch Park reaches capacity, State Forest use will increase.

At present, there are no US Forest Service or private campgrounds in the immediate area and none are planned. Recreational development on private land adjoining the State Forest is also possible. Any such development would have an impact on State Forest use. Private commercial recreation development could be more sophisticated and include cabins, stores, ponds, swimming facilities, etc. This type of development would tend to increase use of the State Forest, especially day use.

All State Forest recreational facilities are currently available to the public free of charge. Studies of a possible fee system for our campgrounds have shown that the expected revenue of a fee system equals the cost of collection. Because of the marginal economics, a fee system has yet to be instituted. However, adoption of a fee system may be instituted in the future for the following reasons: campers would be more accountable, the fee would serve as a deposit in the event the site is vandalized or left strewn with litter, the current informal system of leaving property (which must sometimes be removed by Forest staff) to “reserve” a site would be eliminated and the Forest would generate income. If a fee is charged for each vehicle, traffic congestion would also be reduced.

Winter sports use of the forest is currently very low. Winter overnight use is virtually nonexistent. The Forest is occasionally used in winter by cross-country skiers, ice skaters, snow players and off road vehicle enthusiasts. Winter use is also limited by posted closures of the county road via a locked gate. There are plans to install locked gates on the Bear Creek and Balch Park access roads soon.

Potential New Development Sites

Group camps – More group camps are planned because of increased need. A number of sites have been identified that will accommodate large groups of campers. Two of these show great promise because of their proximity to the dumpster facility and to State Forest Headquarters. As with the Methuselah site water would not be available, simplifying the construction process if these sites are developed.

Shake Camp - Room exists at the current Shake Camp location for expansion to approximately 40 sites. This would be an increase of 29 sites over the existing facility. The existing water system could be used until campsite locations higher in elevation than the present tank are

developed. At that time, another tank could be constructed above the present tank location. The spring source has an adequate flow to supply an expanded facility.

Frasier Mill – An additional "loop" could be constructed west of the Camp Lena Road across from the existing Frasier Mill campground. An existing skid road could easily be upgraded to an access road with little earthwork being needed. The gentle topography of the area would require little work to install up to 20 additional campsites. A new pit toilet would need to be installed and water is already present upslope.

Public Corrals – Many overnight users of the corrals are fearful that harm may come to their horses due to predation by mountain lions. Horses are not allowed within the campgrounds, and currently there are no facilities at the corrals to accommodate people. Therefore, it is prudent to develop these areas to make them more user-friendly for the equestrian users at Mountain Home. There is adequate room at each set of public corrals to accommodate the construction of campsites. At the westernmost corral, there is space to build two campsites complete with stoves, lockers, tables, trash cans, and a pit toilet. Water is already available at the corral.

The easternmost corral has sufficient room to construct five to eight campsites. There is abundant young conifer growth present to visually screen each site. The sites can easily contain lockers, tables, stoves and trash cans. Water is available at the corral. A pit toilet is located nearby at the Shake Camp Campground or a new pit toilet could be installed.

Enterprise Mill - This site has possibilities for a large 40-50 site campground because of its size and gentle topography. Water is available upslope from the proposed location. A suitable site for a group camp exists in the mosquito pond area or the Miller leased property in T19S, R30E, Section 25. This lease expires in 2015.

Section 19, East of Tule River - Several small benches and flats in this area are suitable for moderately sized campground development. Vegetation is dense young growth that would give good shielding between campsites. Water is located upslope.

Hidden Falls - This campground area is used heavily for day use. Several picnic sites could be developed immediately east of the river, which could be used for day use only. However, given the congested state of day use in this area on weekends, this kind of expansion must be carefully planned.

Cabins – A number of sites have been identified that could accommodate small log cabins that the public could rent for a more personal and private camping experience. These sites are located near Tub Flat, Dogwood Meadow, Bogus Meadow and Brownie Meadow. The USFS currently rents the Guard Station that is located on the Balch Park Road adjacent to Mountain Home for $160.00 per night.

Recreation Management Guidelines

1. The State Forest is best suited for a rustic type of recreational facility that is less likely to impact the other management goals of the forest. This would eliminate consideration of capital improvements such as paved campground roads, flush toilets, hookups for electricity and sewer, and commercial concessionaires, other than the pack station. Campgrounds shall be designed for tent campers and small to moderate sized recreational vehicles. The existing design of campground facilities has proven to be vandal resistant, attractive, and economical. These standard designs should continue to be used with experimental use of any other designs that show promise of being superior.

2. Recreation areas will not be located in old - growth giant sequoia groves. These areas are highly hazardous to campers due to the chance of windthrow and loss of limbs from the old

growth trees. Also, site disturbance from campgrounds may have adverse effects on the old growth trees.

3. Maintenance of existing facilities is the top priority. Expansion should occur only if projected operating funds and manpower are adequate to maintain the expanded system.

4. Emphasis will be placed on expansion of existing facilities and concentration of use into moderate sized campgrounds. This will reduce development and maintenance costs. Numerous small facilities scattered over a large area should be discouraged.

5. Major winter sports development is not planned. Winter sports use, such as cross-country skiing and snowmobiling, will continue to be limited by controlling winter access to roads and parking areas.

6. Timber management activities must be coordinated with recreation planning. Proposed recreation sites should be harvested in such a way as to remove all current and projected hazardous trees while leaving the young growth stand and understory intact. Small sales will be planned to remove hazardous trees in existing campgrounds as needed. Roads and landings should be laid out with possible recreational use in mind.

7. ATV use on public roads is increasing. Some emphasis should be placed on designing a trail system that will allow for ATV use without the need for them to ride on the public access roads. A five to six mile ATV trail is being evaluated. Trail location should focus on using existing secondary roads and skid trails that will allow for minimal disturbance to vegetation and other sensitive areas. Trails should be located away from springs, watercourses and meadows to the greatest extent possible. Furthermore, off-highway recreational vehicle trails should be placed as far away from equestrian and hiking trails as possible. Erosion control structures to prevent soil displacement shall be installed to those standards set forth in the Forest Practice for tractor trails.

8. Use strategically placed and planned silvicultural treatments around and within old-growth giant sequoia groves to maintain scenic vistas. Similar treatments should be performed to enhance vistas of Maggie Peak, Moses Mountain and Dogwood Meadow.

9. Control competing vegetation in vista areas and high use areas, i.e. campgrounds, to lessen the threat of accidental wildfire and to maintain the scenic value. Vegetation shall be maintained through various methods, including but not limited to, prescribed burning, grubbing, mastication and herbicides.

Strategic Plan for Recreation

Campground Facilities – Signs indicating which sites will accommodate trailers have been ordered and will be installed soon. Stoves, vehicle bumper logs, handrails, foot bridges, and wooden table tops have the shortest usable life in our campgrounds. These items need to be replaced every 15 to 20 years; sooner if subjected to vandalism. Major maintenance, repairs and improvements have been performed at Frasier Mill, Hedrick Pond, Shake Camp, Moses Gulch and Hidden Falls Campgrounds within the last 15 years. Additional work has been performed at Frasier Mill and Hedrick Pond in 2009. Most maintenance work resulting from routine use can be planned for, i.e. roads, water systems and trash receptacles. However, repairs resulting from abuse, mistreatment and vandalism must be corrected immediately. Therefore, materials commonly used for such corrective action are kept in inventory when funds allow. Campground maintenance is a continuous process that varies from year to year. The emphasis will be to replace high maintenance structures with more durable materials, such as using boulders to replace wooden barriers. Table four delineates planned recreation maintenance and construction projects and a timeline for each. All these projects are contingent on adequate funding.

Roads - Campground road systems will require periodic maintenance depending on use and weather conditions. All roads and parking areas within campgrounds will be surfaced with crushed rock, which will provide for low maintenance and dust abatement while having a natural appearance. Rocked roads also provide an all - weather roadbed.
At present, 90 percent of the campground road system is surfaced with crushed rock. The parking areas in some campgrounds need base rock applications and should be surfaced as soon as possible. These roads should then be graded as necessary to maintain the surface and improve drainage.

Water Systems - State and County laws require that public water supplies be treated or protected by from sealed sources. Since no electricity is available at any of our campground facilities, we must rely upon sealed springs and gravity fed systems to supply water to campgrounds, picnic areas and administrative facilities. These systems must be maintained so that contamination will not result from surface water or outside sources. Sampling of all water sources for bacterial contamination will be continue to be performed monthly during the recreation season.

Public Corrals - Two sets of public corrals exist in the Shake Camp area. Both sets of these corrals should be maintained for the use of public stock. Both sets of corrals could be expanded to hold more stock. Several small corral paddocks in a series is the preferred design to keep stock separated and increase utilization of the corrals. During the expansion phase of these corrals, durable and maintenance free materials should be utilized.

Pack Station – The present lease at the State owned pack station facility should continue. A lease term of five to ten years should be encouraged to provide for consistency in the pack station operation. Demand for rented stock by backcountry users is expected to remain at or above present levels.

Hunting and fishing - Collaborate with the Department of Fish and Game to encourage them to continue the program of stocking the two ponds on the Forest with trout. Expand opportunities for fishing in the North Fork of the Middle Fork of the Tule River and Bear River as feasible, through improved access such as trails. Investigate opportunities for improving opportunities for deer hunting on the Forest, given new hunting regulations restricting hunters to one area of the State in a given season.

Campground Hazard Tree Program – The forest currently has a system of hazard tree evaluation in all of the recreational facilities. All trees which pose a potential hazard to any person, vehicle, or improvement within the recreation area are evaluated and mapped. This gives a permanent record of all trees and shows that they have been evaluated for hazard. In the event that a tree is determined to pose an immediate hazard, the campsite is closed to public use until the tree can be removed. Hazard trees are typically cut by contractors, Mountain Home staff or Mountain Home Conservation Camp. Salvageable logs are then transported to the Conservation Camp or Sierra Forest Products sawmill and the slash is disposed of. This system should be maintained and expanded to cover any new construction.

Fee System - Continue to evaluate the possibilities of instituting a fee system for the State Forest campgrounds if this system can be made cost effective and beneficial to the total recreational program. The necessary infrastructure to support a user self-registration system has been partially installed. All campsites throughout the forest have been assigned numbers that are designated with redwood posts. A simple “drop-box” with tear off envelopes/registration cards should be placed at the entrance to each campground. A fee/registration system could generate much needed operational funds and provide some level of recourse should the site or facilities be damaged.

Table 4. Proposed timetable for recreational development and maintenance.

Activity	Timeline
Maintain and repair campgrounds	as needed
Rock surface roads (Frasier Mill)	2010-2015
Rock surface roads (Hedrick Pond)	2010-2015
Rock surface roads (Moses Gulch)	2010-2015
Construct campsites at public corrals	2009-2010
Expand Shake Camp Campground	2010-2020
Expand Frasier Mill Campground	2010-2020
Construct Powerline Road Group Camp	2010-2020
Construct Hidden Falls Picnic and Parking Areas	2010-2020
Construct Enterprise Mill Campground	2010-2020
Construct Mosquito Pond Group Camp	2015-2025
Construct Section 19 Campground	2010-2020
Construct Rental Cabins	2010-2020

IV. RESEARCH AND DEMONSTRATION

Background

The mandate for Mountain Home research and demonstration program is found in both legislation and Board policy (see “Authority and Statutes”, page 4).

Research in the past has been conducted by cooperators from the California Polytechnic State University at San Luis Obispo, California State University at Fresno, U.S. Forest Service, Pacific Southwest Research Station, University of California at Berkeley, University of Arizona, and private consultants. Additional projects have been carried out by Mountain Home personnel.

Since 1981 variable levels of funding have been available through the Forest Resources Improvement Fund to contract with researchers to conduct studies on the State Forests. Information gained through these projects is reported in various forms. Project results have been written up and disseminated through the California Forestry Note system, peer reviewed journals, and conferences. Project tours are also given for education and demonstration purposes.

Some of the research and demonstration done at Mountain Home is undertaken by CAL FIRE staff, with little or no funding. A joint study with the Sequoia National Forest of giant sequoia regeneration as affected by available light is planned for next field season.

Regional Setting

Mountain Home’s mandate as a working forest, emphasizing sustainable forestry, is an exception to the predominant land use in the southern Sierra Nevada. The vast majority of the giant sequoia forest type is federal land, on which active forest management currently only plays a very minor role (figure 1). It follows that Mountain Home plays a very important role as one of the few places where a wide range of silvicultural techniques, ranging from clearcutting to light thinning, can be used to address important research questions in this forest type.

Several major research and assessment projects have taken place in the central and southern Sierra Nevada. Some of these are described below.

The 3,200 acres Teakettle Experimental Forest is located about 50 miles east of Fresno. The area includes old-growth mixed-conifer and red fir forest at about 3500 to 9200 feet elevation. A large number of studies have been conducted since the inception in the 1930s, ranging from early studies of water yields to streamflow and sedimentation data through recent studies of the effects of fire and thinning on mixed-conifer ecosystems (North et al 2002).

The Sierra Nevada Ecosystem Project (SNEP) is a 1996 assessment of the Sierra Nevada ecoregion conducted at the request of Congress in 1992 (SNEP 1996). The report is a scientific assessment that highlights what is known and presents judgments about what this means for meeting the stated goal of protecting the health and sustainability of the Sierra Nevada while providing resources to meet human needs.

The Sierra Nevada Adaptive Management Program (SNAMP) attempts to answer the question of how to conduct forest vegetation treatments to prevent wildfire, and influence fire risk, wildlife, forest health, and water. SNAMP is made up of researchers from the University of California, University of Minnesota, US Forest Service, US Fish and Wildlife Service, the Natural Resources

Agency, and the public. Other participating agencies include the California Department of Fish and Game, the Department of Water Resources, and CAL FIRE.

Mountain Home efforts to foster cooperative research projects with federal researchers are ongoing. There are numerous opportunities for joint research projects with the Giant Sequoia National Monument.

Research Priorities

Recent applied research on the effects of forest management and silviculture on giant sequoia have been done primarily at Mountain Home and at the University of California's research forests, Blodgett and Whitaker. Federal lands have seen a preponderance of research on ecosystem function. Management and research at Mountain Home continues to focus on a set of broad themes: protection of old growth giant sequoia and recruiting new old growth trees, restoration of new age cohorts of young growth giant sequoia, growth and yield of giant sequoia in a mixed conifer landscape and resilience to fire and changes in climate.

Giant sequoia reproduction problems and how this relates to past fire suppression and possibly other factors is not well understood. A century or more of aggressive fire suppression has resulted in a lack of regeneration and young age cohorts in giant sequoia stands (Bonnicksen and Stone 1982, Parsons and Debenedetti 1979). Restoring new age cohorts is a high management and research priority on Mountain Home. Long-lived pioneer species such as giant sequoia require relatively severe disturbances to facilitate cohort establishment and recruitment (York et al *In Press*). Roller (2004) concluded that a combination of silvicultural strategies such as prescribed fire, overstory thinning, and planting are optimal for establishment and growth of giant sequoia.

We have a unique opportunity to investigate how different forest management techniques can modify the effects of possible climate change on forests in this region. The interaction between fire, climate change and survival and growth of giant sequoia is an increasingly important area of research. Research in this area has been predominantly historical. Swetnam (1993) investigated historical effects of fire and climate on giant sequoia. (Parsons and Debenedetti (1979) concluded that fire suppression caused changes in successional patterns, resulting in higher densities of small trees notably white fir and increased ground fuel. Given the uncertainty around extent and direction of climate change over the next several decades, an important area of research and demonstration on Mountain Home going forward will be identifying robust silvicultural prescriptions. Robust in this case means prescriptions that maintain resilient forests under the widest possible range of unknown future climate regimes.

Spacing and gap openings have a significant effect on height and volume growth of giant sequoia (Heald and Barrett 1999, York et al 2002, 2007), although Peracca and O'Hara (2008) suggest the relationship may not be as clear as previously thought. There is an ongoing need for further research on growth and yield of managed stands of giant sequoia.

Recreation is the legally mandated primary land use at Mountain Home. Research on recreation experiences in a range of different managed and unmanaged forest conditions is a high priority.

The Forest also provides an excellent opportunity to investigate forest management approaches to mitigate the effects of past fire suppression, and prevent future severe wildfires. Fire suppression has caused forests in this region to become denser in many areas, with increased dominance of shade-tolerant species. Woody debris has accumulated, causing a buildup of surface fuels.

Young growth giant sequoia has the potential to become an important tree species for wood products utilization. Optimal stand structures, stocking levels and stand composition of giant sequoia in mixed conifer stands is an important research area. Results will be useful for

landowners throughout the Sierras who are currently planting or contemplating planting this species.

Surveys, monitoring and protection measures for the identified listed, candidate listed and sensitive wildlife species in Appendix C and their habitats is a high priority. This includes, but is not limited to, Pacific fisher, Sierra Nevada red fox, northern goshawk, foothill yellow-legged frog, deer, fish and sensitive forest bat species. As a research forest, MHDSF continues to accumulate its knowledge base of these species. In addition to surveys, existing resource inventories such as the Continuous Forest Inventory and the old growth giant sequoia complete inventory will be used to characterize and monitor habitat on the Forest. We will seek to develop cooperative research priorities with academic institutions and State and Federal agencies. Examples of potential partners include California Polytechnic State University, The Giant Sequoia National Monument / Sequoia National Forest, Tule River Indian Reservation and the Department of Fish and Game.

As funding allows, MHDSF plans to continue to conduct various wildlife inventory studies to improve our knowledge of wildlife species habitat use and improve the detection of rare, threatened, or endangered species. All detections of rare, threatened, or endangered species will be documented and assessed to determine if these biological resources are being impacted by any projects conducted under the guidance of this management plan.

Research Projects

Historical and Ongoing Research Projects

Appendix B contains a summary of historical research projects at Mountain Home. Ongoing research and demonstration projects at Mountain Home are summarized below.

Growth and Yield of Young Growth Sierra Redwood - This study continues work published in California Forestry Note #72. A second Forestry Note, # 113, was published in 2000. Future plans call for continued measurement of the existing growth plots and further projections of yield based on volume.

Photo Point Study – This ongoing experiment documents changes in the forest landscape over time, using a system of permanent photo points.

Hybrid pines – Performance of 15-year-old hybrid pines was reported in California Forestry Note #81. This study may be continued to evaluate growth for a longer period of time.

Blister Rust Virulent Race – This study documents long-term trends in the establishment and spread of the virulent race of white pine blister rust. Twenty-six potentially resistant sugar pines have been identified on the State Forest; all trees have been tagged and mapped. Seed was collected and tests for resistance are underway. This work will update the earlier Major Gene Resistance monitoring plantations that became infected by the virulent race.

Vegetation Responses and Fire Hazard With and Without Burning in Uneven-aged Harvests. This study looks at vegetation responses in various sizes of group selection units to three methods of slash treatment: broadcast burning, lopping, and piling and burning. Scott Stevens published an article in Forest Ecology and Management in 1999. Re-measurement of these plots should be performed within the next five years.

Response to Management Strategies in Young - Growth Giant Sequoia Stands at Mountain Home Demonstration State Forest – Contract with California Polytechnic State University at San Luis Obispo. This study investigates the growth response of young-growth giant sequoia to variable levels of thinning and prescribed fire. Field work is ongoing.

Old growth giant sequoia inventory. This is an exhaustive inventory of all old growth giant sequoia trees on the Forest. In addition to measurements of dimensional and structural characteristics, each tree is tagged and a GPS position recorded. Started in 2001, this inventory is approximately 40 percent completed. Forest staff including retired forest manager Dave Dulitz are undertaking this project.

Planned Future Research Projects

Mountain Home Demonstration State Forest is rich in biological and cultural resources. The Forest's mandate emphasizes recreation, and conservation of old growth giant sequoia ecosystems. This combination of factors drives the priorities for research and demonstration projects identified below. The proposed projects identified below constitute a wish list under ideal conditions. Actual implementation of these projects is contingent on adequate funding

Quantitative and qualitative study of recreation use. The study prepared in 1990 should be updated when funding is available to stay current on meeting the needs of the public. Outputs would include statistical information on recreational use; a new projection of campground capacity is also needed. The study will also document public perceptions on how well our existing facilities serve their needs.

Visitor need for interpretive programs. Conduct a survey of preferred topics for show-me trips, nature trails, auto tours, and campfire talks. Determine level and type of program desired and how conservation messages can best be woven in. This will require additional staffing and funding to accomplish.

Hardwood management. Study the effects of different levels of black oak management on production and growth of sprouts, mast production, growing stock levels, and growth of other species.

Campground impact. Determine the condition of soils and vegetation in existing recreational sites, using points and soil profile measurements. Study tree growth rates, crown vigor, root development, physical damage, and seed production of each species and relate results to varying degrees of recreational impact.

Monitor the status of old growth giant sequoia and investigate techniques to encourage giant sequoia regeneration and ecosystem sustainability. A 100 percent inventory of old growth giant sequoia (approximately 4,000 trees) will be completed. GPS location, size, and other attributes will be recorded. This will facilitate a monitoring of the sustainability of the old growth ecotypes. Group selection openings created a decade ago for regeneration status will be measured and analyzed. A study to examine methods to re-introduce fire into old growth giant sequoia groves will also be performed.

Explore the utility of bedrock basins to pre-settlement Native Americans. Conduct a study to examine bedrock basin associations with other cultural evidence. This should indicate their use by Native Americans, and is a separate issue from the ongoing one regarding whether the bedrock basins are natural or man-made.

Optimum stand structure for uneven-aged mixed conifer stands that include a young -growth giant sequoia component. Investigate the optimal stocking levels and stand composition of giant sequoia in mixed conifer stands. Conduct experiments to thin to low densities that approach natural spacing, and monitor over time to investigate effects of drought. This data will be useful for landowners throughout the Sierras who are currently planting this species.

Uneven-aged management study. Proposed literature review and field study of uneven-aged management in different stand types on the State Forest.

Comparative fuel volumes. Conduct a study to compare fuel volumes in the undisturbed old-growth giant sequoia type, recently burned old-growth stands, slash in old cuts, slash in new cuts, and different slash treatments required by the Forest Practice Act.

Campground rejuvenation. Document results of different techniques to revegetate deteriorating camp areas. Methods used could include planting, cultivation, fertilization, and irrigation.

Visitors' aesthetic preferences. Study visitor responses to scenic groves of giant sequoia in a virgin state and compare to appearance of stands harvested by different methods.

Strategic Research Plan

The goal of this plan is to build upon the current demonstration program by emphasizing research infrastructure, applied demonstration targeted towards small forest landowners and outreach. This plan identifies specific objectives to be accomplished within the life of this management plan, and resource requirements.

Research Infrastructure

A demonstration forest is also a research forest. Some projects are accomplished by simply observing the process and the outcome (strictly demonstration). Many others, however, require the rigors of the scientific process to further the state of knowledge about forest resources (research or experimental).

Infrastructure is defined as the basic elements necessary to facilitate further activity. For this plan, research infrastructure includes researcher facilities, baseline data and information systems.

Objective: Maintain the available housing, office and outbuildings.

This will be an ongoing function of Mountain Home staff that will include routine maintenance, materials for minor building repairs, and necessary supplies including propane, gasoline, and cleaning supplies. It also includes the need to replace items that are subject to exposure or have a limited lifespan, such as paint, roofing, siding and plumbing. Of top priority at this time, is a need to re-roof all of the structures that are located at the summer headquarters. Woodpeckers tend to peck holes into the siding of the summer office, however, given this building is a historic resource, State archaeologists require the shakes to be replaced with similar material. Maintaining historic buildings in their historic state takes additional time and manpower.

The winter office facilities consist of an office/living quarters, a small shop, and a garage. The shop is relatively new but the garage and office are in need of repair. The office windows need replacing and the roofs of both building need to be replaced. Both buildings need a new coat of paint to prevent damage from the weather as well. When such repairs are made, some emphasis should be placed on using materials with a long useable lifespan, i.e. metal roofs as opposed to composite shingles.

Objective: Collect, organize, and store data on tree and plant inventories; wildlife and fish inventories; and soil, geologic, meteorological, and watershed data so that it is available to researchers.

CFI data is updated every five years. Significant Mountain Home staff time is allocated to collecting and managing this data. Both of these inventories will be periodically reviewed for appropriateness and efficiency by Mountain Home staff and the State Forests' Biometrician and Research Coordinator.

Documents relating to historical inventories of any of the above elements will be scanned so that they are available via either CD or the state forests web site. Raw data sets that are not currently

being used by the collecting researcher(s) for publication will be made available via flat data files that will be included along with the scanned documents. A key to the data fields shall be included with each data file.

An information system will allow researchers to access data stored by the Forest. Relational databases containing the CFI data will be developed. User's guides and installation wizards will be developed for these databases. GIS data layers will also be available for boundaries, public land survey, roads, watercourses, soils, and other attributes including CFI plot locations. Downloads of these databases and files will be available by request on CD or on the state forests web site.

A key to all of these resources will be maintained. This list will be searchable by keyword, title, and author.

Research Infrastructure Costs: The CFI data collection is part of the ongoing operational cost of Mountain Home. The plant survey and raptor study will be funded from Sacramento Research and Monitoring funds at approximately $50,000 and $30,000 respectively.
The State Forests Publications Coordinator in Sacramento will scan research documents. Data set organization and key definitions will be the responsibility of the Research Coordinator in Sacramento in cooperation with the Forest Manager.

The CFI database development, maintenance and support will be the responsibility of Sacramento. Data entry is the responsibility of Mountain Home. Forest staff will maintain a key to all of these resources with assistance from Sacramento staff.

The existence of these research infrastructure elements will draw increased interest to Mountain Home from a variety of wildland researchers. This will entail additional workload requirements on Mountain Home and Sacramento staffs. An increased volume of proposals is expected with an associated increased request for funding from the research funds in Sacramento.

Applied Demonstration

Objective: Projects dealing with impacts to sensitive species and their habitat from various harvesting methods should be emphasized.

Objective: Demonstrate effects of various methods of managing younger forest stands.

Because this is a general trend, work concentrated on young growth management should be considered. Studies concerning optimum growing stock levels, young growth harvesting equipment, reduction of stand damage during harvest, and comparisons of even-aged and uneven-aged management are possible examples.

Objective: Experimental work in all aspects of regeneration is still needed.

Also of prime importance in the Sierra Nevada are solutions to both natural and artificial regeneration problems.

Objective: Investigate effect of the California Forest Practice Act on timber harvesting.

Investigate effects in terms of costs, environmental impacts, mitigations, and productivity.

Applied Demonstration costs: The 100 percent inventory of old growth trees will be conducted as a part of regular Forest operations, being done primarily by Seasonal Forestry Aides. The group selection measurement will either be funded or implemented by Sacramento in cooperation with the Forest Manager. Estimated cost is either $30,000 for a contract or three months of personnel time if done in-house. The fire and fuels study will be contracted out and funded by the Sacramento research fund for an approximate cost of $50,000.

The archeology study of rock basins will cost approximately $50,000 and will be funded by the Sacramento research fund.

These projects also will result in Forest staff time requirements for outreach projects such as report writing, presentations, and tours.

Outreach

Background: The State forest is utilized by approximately 40,000 – 60,000 visitors each year, including both overnight and day use. They are the primary target for existing educational efforts on the forest. At present, the State Forest is involved with a modest level of public education. Tours and programs are provided for various groups on request. Groups have included college students, environmental educators, resource managers, and groups from the general public. Special programs could be developed to draw additional groups, such as lawmakers or school teachers, to the forest.

The focus of educational efforts on the forest has been three-fold: to explain visitor rules on topics such as hunting, fire use, and off-road vehicles; to provide site specific information on topics including the local natural history, archaeology, and history; and to include conservation messages such as explaining basic concepts of silviculture and multiple-use management.

In order to convey these messages to as many people as possible, a variety of interpretive facilities have been developed. Since staffing on the forest is limited, most are self-guided or self explanatory. Methods used include self-guided trails and tours, outdoor displays, handout materials, and bulletin boards. All facilities are designed to be as vandal-resistant and maintenance free as possible.

Inventory: A Visitor Center and outdoor kiosk have been added to the Headquarters facility. They provide visitors with interpretive information including handouts, maps, fire prevention information, and answers to other basic questions. An outdoor interpretive center was also constructed by the Mountain Home staff at Balch Park.

Educational materials are also posted on bulletin boards at the visitor center, and at the entrance to most campgrounds. These emphasize campground rules, fire danger, and avoiding bear problems.

The Forestry Information Trail, which starts at Balch Park, is used by a large number of people each year. There is a booklet describing the natural history and management of the area that accompanies this self-guided trail. Having been in existence for a number of years, the trail signs and information booklet are in need of being updated.

A self-guided motor tour has been developed for State Forest and County roads. It uses road junctions and other landmarks as cues tied to descriptive information in a handout.
Other stops have and will continue to be added to increase visitor education and enjoyment.

Objectives: Develop additional interpretive trails near existing campgrounds and other heavily used areas. Possible locations include the Loop Trail at Shake Camp, Frasier Mill, and the River Trail from Hidden Falls to Moses Gulch. Descriptive handouts placed at these trailheads would increase the education and enjoyment of the public while explaining State forest management.

Tours of different areas of the forest could be organized and led by staff. Topics and locations could include historical areas, recent or active timber sales, experimental plots, etc. The general public could be informed of tour dates and times through posting in campgrounds and press releases to local newspapers. Groups could be encouraged to request guided tours on specific topics. Development of an environmental program for various school groups should also be initiated.

A strong outreach program to convey information and display results complements the investment in research and demonstration. Outreach is accomplished through papers, articles, presentations, tours and the internet.

Public outreach and education will require a significant time commitment by forest staff and will be somewhat limited without additional personnel.

Objective: Research results from Mountain Home are provided to customers.

Each project will be evaluated as to the most appropriate outlet for dissemination. The following table provides some guidance.

Guidelines for publications

The following are ideas and guidelines for choosing the best types of publications for different research and demonstration studies.

Peer reviewed scientific journal such as Forest Science, Canadian J. of Forestry, J. of Forestry, J. of Wildlife Mgmt. These are appropriate for rigorous scientific studies, and enforce objectivity and thorough review of methods.

Applied peer reviewed scientific journal such as the Western J. of Applied Forestry. This is appropriate for studies with direct field applicability.

Institution-specific publications such as Hilgardia (UC), General Technical Reports (USDA Forest Service). These are appropriate for lengthy publications.

California Forestry Note. This is appropriate for applied articles of six pages or less, that may be a shorter summary of journal paper.

California Forestry Report. This is appropriate for applied articles of greater than six pages. This may be a longer more detailed version of a journal paper.
California Demonstration State Forests Newsletter. This is a quarterly publication that includes research, demonstration, recreation, and other news . All state forests staff contribute articles.

Poster presentations at conferences, professional workshops, meetings and symposia. These are appropriate at any stage of development for a project.

Oral Presentations at conferences, professional workshops, meetings and symposia. These are appropriate for critical research results

Tours, educational . These may be conducted for any interest group including professionals, politicians, or students.

Tours, workshop. These are usually directed towards natural resource professionals.

State Forests Web Site (part of the CAL FIRE web site). This can contain electronic copies or links to all relevant publications, posters, etc.

Objective: The public has access to information about the State Forest mission as well as past and current projects at Mountain Home.

This will be facilitated by the California Demonstration State Forests web site, which will be housed at the CAL FIRE web site. Past and current project reports and publications will be available, as will data sets. This will encourage building on past projects and using multidisciplinary approaches when researchers are developing proposals.

Outreach Costs: Mountain Home staff time requirements for outreach will vary with the number of publications produced in-house and the number of tours and workshops put on. Editing of contracted publications by Mountain Home staff also consumes staff time and will vary with the number and complexity of projects.

Many of the outreach costs are borne over the entire Demonstration State Forests system, such as the web site or newsletter. This assumes that the biometrician, research coordinator and publications coordinator positions in Sacramento are fully staffed and that operating funds are available. At least $10,000 per year will be needed in Sacramento to fund publishing costs.

Conclusion

This research and demonstration plan for Mountain Home provides a planned direction for the continued success of Mountain Home. It is not an enforceable standard for management of Mountain Home, but rather a plan for what Forest staff would like to achieve given their desired ideal funding level. The plan is contingent on an ideal scenario of estimated funding becoming available. If funding fails to materialize, we will scale down implementation of this plan as necessary.

The costs provided are intended to facilitate budgeting over the period. Growth in demonstrations and experiments will result from attention to research infrastructure and outreach. The specific demonstration projects outlined above will add significant value to current operational practices by using them as models for sustainable forest management.

V. FOREST MANAGEMENT

Vegetation Resources Inventory

Productive coniferous forest covers 4,834 acres out of a total of 4,858 acres of Mountain Home. The remaining 24 acres are covered with brush and rock. Figure four shows vegetation types and site classes on the Forest.

Mountain Home is famous for its giant sequoia trees. They occur in small groves and as scattered individuals throughout the Forest. The sixth largest tree in the world, the Methuselah tree, is found on Mountain Home. Old growth giant sequoia trees are protected from harvesting. In addition to old growth giant sequoia, Mountain Home contains young growth giant sequoia, ponderosa pine, white fir, incense-cedar, black oak, white oak and white alder. The Forest is predominantly mixed conifer stand types of these species.

Mountain Home is continually surveying resource conditions on the Forest through measurements of inventory plots. These form the information base for management planning and supporting research projects. Three complementary resource inventory and monitoring systems exist, the Continuous Forest Inventory (CFI) system, the Forest Resources Inventory (FRI) system and the old growth giant sequoia inventory. The CFI and old growth giant sequoia inventories are primarily for research purposes.

The Forest Resources Inventory (FRI) system consists of temporary plots covering approximately one-tenth of the Forest are re-measured periodically, approximately every 10 years. In addition to timber characteristics, data measured includes snags, species, size and other characteristics of all live trees, and unique characteristics such as goose pens, fire scars and broken tops with potential wildlife habitat value. Mountain Home will seek to implement a pre and post harvest inventory of all major timber sales. By implementing a pre and post harvest inventory we will be able to verify that we are accomplishing the forest management objectives we have identified. The FRI provides a detailed picture of current resource conditions.

A Continuous Forest Inventory (CFI) system of permanent plots that are re-measured every five years has been in place since 1970, and it continues to be measured. A 20 X 20 chain grid system was placed over the ownership and 114 permanent plots were established. Each tree is uniquely tagged and identified. The plots are re-measured every five years. Information gained from the CFI data includes gross and net merchantable volume, number of trees per acre, ingrowth, volume per acre, and volume growth per acre. This information is used to make forest management decisions, and to support research and demonstration activities. The CFI inventory provides a record of detailed re-measurements on the same trees over time and provide the most accurate record possible of forest development changes over time, such as growth.

The old growth giant sequoia inventory is an exhaustive enumeration of all the old growth giant sequoia trees on the Forest. Each tree is identified with a uniquely numbered metal tag, and its location is recorded with a GPS system. Measurements include dimensional and structural characteristics. This inventory is approximately 40 percent completed. Primarily intended for research and monitoring, this inventory is going to be immensely valuable for tracking the status of the old growth giant sequoia resource in the region.

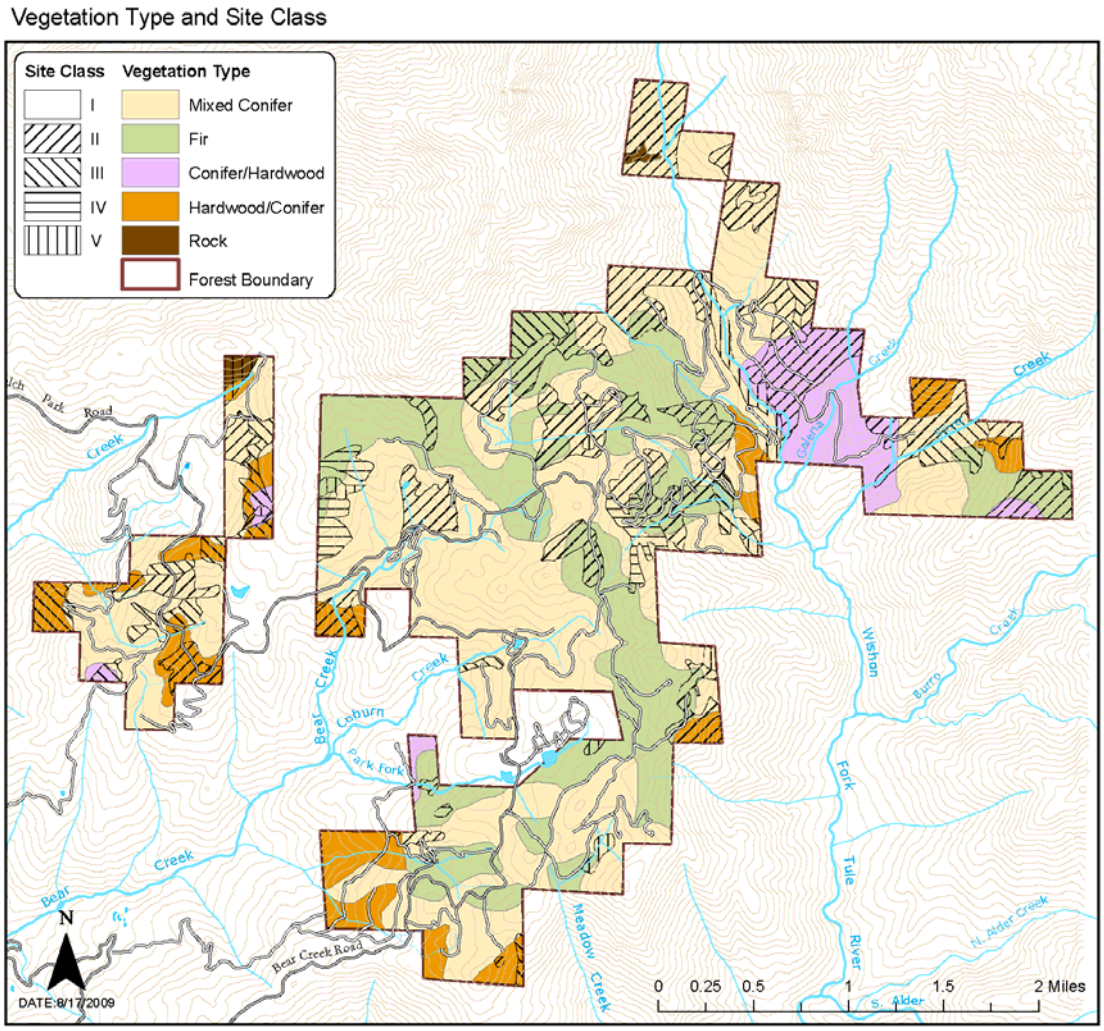

Figure 4. Vegetation types and site class map of Mountain Home.

Basal area per acre for all species including old growth giant sequoia averages 262 square feet per acre. The average standing volume per acre including old growth giant sequoia is about 56 thousand board feet per acre. Approximately 40 percent of that volume is made up of old growth giant sequoia. Hardwoods remain a small component of all stand types. The current inventory for the Forest is summarized in tables 5 through 7 below.

Table 5. Summary of current Forest inventory conditions, including old growth giant sequoia.

Stratum (vegetation / site class)	Acres	TPA (con)	TPA (hwd)	TPA (all spp)	BA/ ac (con)	BA/ ac (hwd)	BA/ ac (all spp)	Con gross vol / ac, bf	Hwd gross vol / ac, cf
Conifer/Hardwood-1	164.3	158	150	307	173	92	265	23,511	1,252
Conifer/Hardwood-2	135.2	116	72	188	197	54	251	31,920	1,305
Fir-1	934.2	108	5	113	288	3	291	73,925	42
Fir-2	245	148	6	154	270	7	276	57,298	171
Fir-4	103.9	76		76	222	0	222	58,710	
Hardwood/Conifer-1	237.2	127	68	195	159	68	227	24,174	1,732
Hardwood/Conifer-2	109.6	129	130	259	154	94	248	19,286	1,921
Hardwood/Conifer-3	71.1	134	38	172	113	51	164	10,587	1,622
Mixed Conifer-1	2027.5	118	7	125	266	5	271	63,244	108
Mixed Conifer-2	547	143	20	163	239	12	251	50,629	165
Mixed Conifer-3	127.1	128	7	135	194	9	203	36,960	344
Mixed Conifer-4	61.2	47		47	166	0	166	43,168	
Mixed Conifer-5	71.4	125	25	150	195	16	211	41,814	304
Rock	23.7		204	204		68	68		
Totals	**4858.4**	**121**	**22**	**142**	**246**	**16**	**262**	**56,030**	**324**
SE, %								**2.6%**	**7.3%**

Table 6. Stand table[2]. Number of trees per acre by diameter class and species.

DBH Class	YG GS	OG GS	WF	IC	SP	PP	RF	**Conifer Subtotal**	BO	LO	WA	**Total**
4-8	0.90		16.70	12.54	1.92	2.66		34.70	4.77	0.58	0.11	40.15
8-12	1.40	0.21	15.45	8.27	1.48	1.71	0.14	28.64	8.88	0.83	0.18	38.54
12-16	0.94		10.32	5.04	1.18	0.86	0.12	18.47	3.87	0.47	0.09	22.90
16-20	0.93	0.06	7.83	3.01	1.13	0.35		13.31	1.09	0.06	0.01	14.47
20-24	0.57		5.24	1.71	0.76	0.27	0.03	8.59	0.40	0.01	0.07	9.07
24-28	0.39	0.01	3.80	1.36	0.62	0.16	0.02	6.35	0.09	0.01	0.01	6.46
28-32	0.37	0.03	1.98	0.49	0.49	0.13	0.03	3.52	0.06	0.01	0.01	3.59
32-36	0.29		1.25	0.32	0.41	0.07		2.33	0.04	0.01	0.01	2.39
36-40	0.21	0.01	0.75	0.24	0.24	0.07		1.52	0.00			1.52
40-44	0.16	0.02	0.34	0.14	0.16	0.02	0.01	0.84	0.00	0.00		0.85
44-48	0.128	0.02	0.158	0.116	0.138	0.020	0.004	0.58	0.002			0.58
48-52	0.082	0.03	0.112	0.053	0.074	0.006		0.36		0.002		0.36
52-56	0.069	0.02	0.036	0.021	0.066	0.009		0.22				0.22
56-60	0.050	0.03	0.014	0.013	0.031	0.005		0.14				0.14
60-64	0.028	0.04	0.010	0.007	0.028	0.001		0.114				0.114
64-68	0.016	0.04	0.003	0.007	0.010	0.001		0.071				0.071
68-72	0.014	0.04	0.001	0.002	0.006			0.065				0.065
72-76	0.005	0.02		0.002	0.002			0.031				0.031
76-80	0.0040	0.04		0.0006		0.0010		0.048				0.048
80-84	0.0010	0.04						0.042				0.042
84-88	0.0030	0.03						0.035				0.035
88-92	0.0010	0.034			0.0010			0.036				0.036
92-96	0.0010	0.035						0.036				0.036
96-100	0.0010	0.031		0.0012				0.033				0.033
100-104		0.039		0.0004				0.039				0.039
104-108		0.032						0.032				0.032
108-112		0.039						0.039				0.039
112-116	0.0010	0.030						0.031				0.031
116-120		0.021						0.021				0.021
120-124		0.023						0.023				0.023
124-128		0.024						0.024				0.024
128-132		0.024	0.0003					0.024				0.024
132-136		0.018						0.018				0.018
136-140		0.022						0.022				0.022
140-144		0.015						0.015				0.015
144-148		0.018						0.018				0.018
148-152		0.016		0.0002				0.016				0.016
152-156		0.012						0.012				0.012
156-160		0.013						0.013				0.013
160-164		0.012		0.0006				0.012				0.012
164-168		0.012						0.012				0.012
168-172		0.008						0.008				0.008
172-176		0.008						0.008				0.008
176-180		0.005						0.005				0.005
180-184		0.009						0.009				0.009
184-188		0.0056						0.0056				0.0056
188-192		0.0045						0.0045				0.0045
192-196		0.0049						0.0049				0.0049
196-200		0.0039						0.0039				0.0039
200-204		0.0028						0.0028				0.0028
204-208		0.0035						0.0035				0.0035
208-212		0.0035						0.0035				0.0035
212-216		0.0015						0.0015				0.0015
216-220		0.0020						0.0020				0.0020
220-224		0.0016						0.0016				0.0016
224-228		0.0016						0.0016				0.0016
228-232		0.0016						0.0016				0.0016
232-236		0.00075	0.0001					0.00089				0.00089
236-240		0.00015						0.00015				0.00015

[2] OG GS=old growth giant sequoia, YG GS=young growth giant sequoia, WF=white fir, IC=incense cedar, SP=sugar pine, PP=ponderosa pine, RF=red fir, BO=black oak, LO=live oak, WA=white alder.

Table 6, continued

DBH Class	YG GS	OG GS	WF	IC	SP	PP	RF	**Conifer Subtotal**	BO	LO	WA	**Total**
240-244		0.00109						0.00109				0.00109
244-248		0.00042						0.00042				0.00042
248-252		0.00013						0.00013				0.00013
252-256		0.00051						0.00051				0.00051
256-260		0.00062						0.00062				0.00062
260-264		0.00012						0.00012				0.00012
264-268		0.00063						0.00063				0.00063
268-272		0.00032						0.00032				0.00032
272-276		0.00044						0.00044				0.00044
276-280		0.00033						0.00033				0.00033
288-292		0.00019						0.00019				0.00019
304-308		0.00006						0.00006				0.00006
312-316		0.00008						0.00008				0.00008
332-336		0.00007						0.00007				0.00007
Totals	**6.56**	**1.22**	**63.99**	**33.34**	**8.75**	**6.32**	**0.35**	**120.53**	**19.21**	**1.98**	**0.48**	**142.19**

Table 7. Stock table[3]. Conifer gross Scribner board feet volume by diameter class and species.

DBH Class	YG GS	OG GS	WF	IC	SP	PP	RF	Total
8-12	16	12	196	51	17	11		304
12-16	79		1,254	252	114	157	8	1,864
16-20	169	13	2,058	387	269	124		3,020
20-24	190		2,707	408	319	178	16	3,819
24-28	212	10	3,313	568	432	197	22	4,752
28-32	290	30	2,622	310	552	194	34	4,032
32-36	319		2,327	304	687	181		3,817
36-40	335	12	1,954	303	558	195		3,357
40-44	316	48	1,151	244	506	78	26	2,368
44-48	333	55	676	264	554	121	17	2,019
48-52	266	113	602	154	370	31		1,536
52-56	273	75	242	72	433	63		1,158
56-60	231	150	108	56	245	41		831
60-64	160	258	85	37	253	22		815
64-68	107	258	30	41	101	22		559
68-72	107	353	10	11	73			555
72-76	44	211		12	37			304
76-80	38	452		5		14		508
80-84	14	481						494
84-88	38	418						456
88-92	14	496			35			545
92-96	14	582						596
96-100	14	551		15				580
100-104		758		9				767
104-108		693						693
108-112		917						917
112-116	13	769						782
116-120		574						574
120-124		661						661
124-128		763						763
128-132		814	11					825
132-136		639						639
136-140		850						850
140-144		580						580
144-148		787						787
148-152		705		9				713
152-156		546						546
156-160		721						721
160-164		624		21				645
164-168		673						673
168-172		489						489
172-176		436						436
176-180		368						368
180-184		541						541
184-188		414						414
188-192		338						338
192-196		377						377
196-200		329						329
200-204		247						247
204-208		324						324
208-212		317						317
212-216		150						150
216-220		179						179
220-224		170						170
224-228		149						149
228-232		192						192
232-236		89	12					101

Table 7. Stock table, continued.

[3] OG GS=old growth giant sequoia, YG GS=young growth giant sequoia, WF=white fir, IC=incense cedar, SP=sugar pine, PP=ponderosa pine, RF=red fir, BO=black oak, LO=live oak, WA=white alder.

DBH Class	YG GS	OG GS	WF	IC	SP	PP	RF	Total
236-240		12						12
240-244		148						148
244-248		57						57
248-252		20						20
252-256		78						78
256-260		91						91
260-264		18						18
264-268		93						93
268-272		57						57
272-276		72						72
276-280		60						60
288-292		32						32
304-308		3						3
312-316		16						16
332-336		21						21
Totals	**3,591**	**22,533**	**19,358**	**3,536**	**5,555**	**1,628**	**123**	**56,324**

In the future, we expect that white fir and incense cedar will make up more of the total forest volume, while sugar pine will decrease in both numbers and volume. This trend will be hastened by the current high mortality of sugar pine due to white pine blister rust (see the Insect and Disease section for further discussion).

Prior to the purchase of the Mountain Home Tract in 1946, the entire tract was cruised at least twice. The first cruise was performed by the James D. Lacey Company of Portland, Oregon in 1907 or 1908. It is not known what merchantability standards or cull percentages were used in the Lacey cruise. The tract was partially cruised by the U. S. Forest Service in 1936 and the remainder in 1945 using a 10 percent sample.

In 1945, the California Department of Forestry hired Belknap C. Goldsmith to appraise the value of the tract. According to his notes, the Mountain Home Tract had a total of 92.45 MMBF in whitewoods (young growth redwood was not counted). He arrived at this by subtracting the amount of lumber cut from the tract since the Lacey cruise. Goldsmith's method of using 37-year-old cruise data and then subtracting the estimated amounts cut with no consideration for growth, gave a very conservative estimate of volume and value. In his notes he concedes that much of the cut redwood was from dead and down trees, but he was not able to estimate an exact amount. He, therefore, subtracted the entire amount of harvested redwood from Lacey's estimate of standing redwood volume. It is therefore probable that his volume figures were under estimates of the actual stand condition. Table 8 summarizes these earlier inventory efforts and the most recent 2007 FRI.

Table 8. Summary of historical forest resource inventories.

	Volume, gross board feet per acre					
	PP	SP	WF & IC	Total WW	GS	Total, All Spp
Lacey (1908)	2,290	9,342	10,300	21,931	28,622	50,553
Goldsmith (1945)	2,180	8,116	8,819	19,115	23,443	42,559
USFS (1936,1945)	2,635	8,422	10,687	21,744		
FRI (2007)	1,628	5,555	22,894	30,077	26,124	56,200

Clearly a comparison of these data must be tempered with a recognition of their differences. Because they are from different eras, objectives and priorities are different. Log rules, merchantability standards, cruising methods and analysis methods were no doubt different and are largely unknown for the older inventories. Nevertheless, we believe these data sets witness some general trends in vegetation dynamics on Mountain Home over the last 100 years: whether

through growth, fire exclusion, timber harvest or a combination of these and possibly other factors, the species mix on the Forest has changed since the early 1900's. The proportion of pine species has decreased somewhat, while the proportion of white fir has increased substantially. This mirrors the trend on forest land throughout the State.

Implications for management on Mountain Home include the need for thinning to reduce stand density and protect old growth giant sequoia trees. Another priority highlighted by these data is the need to encourage shade intolerant species like ponderosa pine and sugar pine, and recruit new age cohorts of giant sequoia.

Growth

Table 9 shows the growth estimates for the two most recent CFI re-measurements. The growth on all species, not including old growth giant sequoia, has averaged about 900 board feet per acre per year.

Table 9. Growth 1995-2007, gross board feet per acre per year[4].

	YG GS	PP	SP	WF	IC	Total
Survivor	118.58	21.58	58.56	391.59	92.20	682.52
Mortality	2.85	0.00	36.96	63.62	3.90	107.33
Logged	0.00	3.81	40.30	66.05	11.68	121.84
Total	121.43	25.39	135.82	521.26	107.78	911.68

Ten one-acre plots were established on the forest in 1952 and 1953. They were used to determine tree mortality caused by insects and diseases, and compare growth data with that of areas recently cut. Nine plots were set up in mixed conifer stands and one was placed in a second-growth giant sequoia stand logged around 1885. The characteristics of the plots varied to represent the different conditions existing on the forest. All trees larger than 11.6 inches DBH were measured, numbered, and tagged. In addition to the growth and mortality data collected for these trees, the smaller trees were counted and seedlings were sampled. Plots were measured every five years from 1954 to 1976. Prior to the establishment of these plots, net growth in old growth giant sequoia had been considered to be nonexistent. Measurements from these plots indicated that the periodic annual increment ranged from 385 to 786 board feet per acre per year.

Site Quality

Site quality on the forest is generally very high. Ninety-one percent of the Forest is classified as Dunnings Site II or better. Mountain Home site quality estimates are based on a site map developed by a previous Forest Manager, Dave Dulitz (figure 4). Site determination is based on a combination of information gathered from the Dulitz site class map and actual measured site trees from the FRI and CFI inventories.

Planned Management and Forest Structure

This section describes the planned management of Mountain Home for the next ten to twenty years. The goals for management of the Forest are described in terms of desired forest structural conditions. Mountain Home balances protection of giant sequoia groves and other public trust resources with sustained productivity and the long term biological productivity of the timberland. The timber management program under this plan is expected to produce a moderate, perpetually

[4] YG GS=young growth giant sequoia, PP=ponderosa pine, SP=sugar pine, WF=white fir, IC=incense cedar.

sustainable harvest level. Harvest levels will support a financially viable timber management program in order to remain relevant as a research laboratory for sustainable forestry on private timberlands. Planned harvest rates are somewhat lower than that of many private owners due to additional landscape and wildlife habitat constraints imposed on Mountain Home as a public forest, and the need to maintain the widest possible range of forest conditions in order to accommodate potential future research studies.

A primary goal at MHDSF is to foster the development of giant sequoia stands, both young growth and old growth, to a point that is reflective of current natural forest conditions in this region. Stands will remain a mixture of conifer and hardwood species typical of the southern Sierra Nevada. As is typical of this area, barring regular fire disturbance or aggressive thinning operations, the characteristically shade tolerant white fir has in many areas of the Forest been able to affect a species shift towards white fir dominance over time, at the expense of pine and other less shade tolerant species. Establishing a more natural species mix will in many cases require a dedicated effort to decreasing the white fir component of stands and cultivating giant sequoia and pine species. Desired forest structure will typically be that of low density, fire resistant stands.

Changes in forest ecosystems over time involve a substantial degree of unpredictability which renders static forest structure goals undesirable. We aim to maintain as wide a range of seral stages and forest structure types as possible, from regeneration to old growth, open and closed stands, in order to maintain options for future management and research.

Maintaining a representation of all seral stages and forest structure types at Mountain Home is important for at least two reasons. First, directions of future research, and the associated need for different forest structures for research, is hard to predict. We wish to maintain maximum flexibility for research and demonstration, and not foreclose on future research options. Second, evidence of large-scale changes in climate is accumulating. There is massive uncertainty about the extent and direction of these changes. It is essential for Mountain Home to maintain the broadest possible range of seral stages and forest structure types to be able to evaluate species responses to different management regimes under a range of possible future climate situations.

An important part of our management is to restore and maintain the full range of age cohorts on Mountain Home in order to be able to recruit old growth giant sequoia and replace old growth trees that are lost to natural forces.

Giant Sequoia Management

Giant sequoia occurs in distinct groves throughout its range. Numerous names have been assigned to the groves within the forest. The Mountain Home Grove is universally used to describe the central grove area. The western fringes of the Mountain Home Grove have also been called the Rancheria Grove. The southern fringes have been referred to as the Crystal Springs Grove. The grove along the North Fork of the Middle Fork of the Tule Rive is known as the Middle Fork Grove. This document refers to this entire area as the Mountain Home Grove.

A separate grove exists in the Silver Creek drainage; it will be referred to as the Silver Creek Grove. This convention agrees with that used in Giant Sequoia Groves of the Sierra Nevada (Willard, 1994).

Definitions differentiating old growth and young growth giant sequoia trees were developed during the initial years of the Continuous Forest Inventory system. The definitions are based on tree characteristics that indicate age.

Table 10 below lists various tree characteristics to be used in determining the age category for giant sequoia trees.

Table 10. Structural characteristics of young growth and old growth giant sequoia trees.

YOUNG GROWTH	OLD GROWTH
Branches (alive or dead) or knot indicators in the lower 1/3 of the trunk.	Lower 1.3 of the trunk free of branches or knot indicators.
Branches small, generally less than 4 inches in diameter.	Large branches, many larger than 4 inches in diameter.
Pointed crown, height growth rapid.	Top of crown rounded.
Growth rings large, averaging 0.1 inch or wider.	Narrow growth rings, less than 0.1 inch.
DBH generally less than 80 inches.	DBH generally greater than 80 inches.
No evidence of fire scars.	Many trees with fire scars.
Excessive taper in open grown trees.	Very little taper in trunk.
Shallow bark furrows.	Deep bark furrows.
Total height is generally less than 200 feet.	Height is often more than 200 feet.

Diameter growth is highly variable and not a reliable indicator of age. It is also difficult and time consuming to determine the age of large standing trees. Height growth is less variable than diameter growth, and is one of the factors used in the definition. Maximum height of giant sequoias at the State Forest is approximately 240 feet. As this maximum is reached, the tree crown becomes more rounded. This begins at an approximate age of 200 years.

Limb characteristics are another good indicator of age. Giant sequoias tend to retain the lower branches longer than most other trees. Limbs can also obtain a very large size. Young trees typically have limbs on the lower third of the bole. The trunks of old-growth trees will be clear except for an occasional large limb or burl.

Old growth Inventory - Giant sequoia is present on approximately 2,677 acres of the forest. There are approximately 4,000 old growth trees, for an average of 1.5 trees per acre. The CFI indicates that old growth giant sequoias occupy about 63.7 square feet of basal area per acre.

In 2001, staff began inventorying and mapping all the old growth giant sequoias on Mountain Home. Over 1,000 old growth trees have been measured and mapped using a Global Positioning System. Stand and stock tables will be developed to assist in the management of the giant sequoias. In addition, a stump inventory has been completed for all giant sequoias cut during the historical logging period. These inventories, along with research and development projects, will assist the staff in managing the giant sequoia groves.

Young Growth Inventory – The 2000 inventory of young growth giant sequoias based on the Continuous Forest Inventory plots shows a total of 31,390 trees. There are an average of 6.53 young growth trees per acre. They represent a total net volume of 17,359 MBF.

Additional planting of giant sequoia trees has occurred outside the giant sequoia groves. There are no statistics for these young trees because they have either not reached sufficient size to be included in the inventory plots or they were not included in the inventory plots.

Other tree species - The stand structure for the other mixed conifer tree species on the forest will be primarily uneven-aged, in which individual trees of a range of ages and size classes are present in the stands. Once the desired long-term forest structure conditions have been accomplished, we anticipate that the oldest trees other than the giant sequoias on the State Forest will be in the neighborhood of 200 years old.

Structural characteristics such as snags, downed woody debris, decadent trees and irregular tree characteristics (large branches, irregular form, hollows) will be retained to a density where they do not pose a safety hazard, fire hazard, impede the establishment and growth of new trees on the site, or provide a source of pest and disease to infect nearby healthy trees. No treatments are

planned to actively create snags by girdling or topping live trees, unless prescribed on individual research installations. A key component of late-succession forest stands are the decadent components, snags and down large logs. Snags from the dominant and predominant members of the stand are preferred, to later become down logs.

Forest Management Guidelines

1. Standing old-growth giant sequoias will not be harvested and shall be protected from damage during all management activities. Old growth trees will be protected during harvest activities. Care must also be taken to avoid cutting or removal of the shallow root system when constructing roads, skid trails, and landings. Timber falling must be done carefully so that damage to the tops or trunks of adjacent trees does not occur.

2. Young growth giant sequoias shall be managed primarily as replacements for old growth trees lost to natural death or historical logging (prior to the establishment of the State Forest). Young-growth trees will be commercially thinned where density is too great for all trees to grow into old growth replacements. Estimates of the density and distribution of old-growth giant sequoia trees prior to 1860 shall be used to determine the optimal stand structure.

3. It is recognized that reproduction of giant sequoia requires disturbance in the form of fire or timber harvesting. Harvesting will remain the primary means used to encourage giant sequoia reproduction. Prescribed fire will be used in certain situations to reduce fuel loading, clear the ground, and provide heat to open giant sequoia cones.

4. No timber harvesting will occur in the Silver Creek Grove.

5. Giant sequoia planted outside of the natural groves will be managed as a timber resource. No attempt will be made to expand the grove area by allowing these planted giant sequoias to become old growth.

6. Selective harvesting of white fir, pine, and incense cedar within the groves will be managed to improve vistas of individual old growth giant sequoia and protect them from wild fire. This harvesting can be performed effectively to enhance the aesthetic appearance of the forest for recreational visitors.

7. A harvest level of 2.4 to 3 million board feet annually will be implemented. This harvest level is less than the indicated net growth of the forest on a sustainable basis. It will permit harvests in perpetuity without depleting the productivity of the soil, the forest stands or other public trust resources.

8. Continue to use uneven-aged management as the primary silviculture system in future harvests on the State Forest. Artificially regenerate openings caused by the removal of trees in group selection cuts. Rely on natural regeneration in other areas.

9. The cutting cycle for operational management will range from 10 to 30 years.

Silvicultural Systems

A variety of silvicultural systems are applicable due to the diversity of the timber stands, age and size classes, species composition, and goals for research and demonstration, wildlife habitat diversity, etc., on Mountain Home. The wide variability in structure conditions within timber stands will necessitate mixing silvicultural systems in some stands while in other stands there may be large areas managed under one system.

Uneven-aged management is the primary silvicultural system, and is used on approximately 75 percent of State Forest lands. This system is the most compatible with the high recreational use of the forest because the stands still look aesthetically pleasing after logging. It is also desirable on sites where tree planting is difficult. Natural regeneration will mainly be used with this system, with some supplemental tree planting. This system can be used effectively where the current stands are of mixed species and ages.

Even-aged management is used on the forest where the existing stands contain little or no understory trees or in areas of severe infestation or infection. The resulting small clearcuts have been limited to small areas no larger than ten acres; generally they are patch cuts under two acres. Artificial regeneration has been used in these areas, resulting in the growth of young ponderosa and Jeffrey pines throughout the forest.

The majority of the forest management activities will be conducted using the following silvicultural methods:

Selection (uneven-aged): Under the selection method, trees are harvested individually or in small groups sized from 0.25 acres to a maximum of 2.5 acres. Single tree selection will be the primary prescription for the true fir and mixed conifer stands. Group selection will be prescribed within the mixed conifer stands to avoid species conversion and to maintain species diversity. Openings will be created to obtain pine regeneration rather than the more shade tolerant species that are favored by single tree selection. Artificial regeneration will be used if necessary in order to supplement natural regeneration and prevent brush species from invading the site.

Transition (uneven-aged): The transition method will be used to develop an uneven-aged stand from a stand that currently has an unbalanced, irregular, or even-aged structure. The transition method involves the removal of trees individually or in small groups from irregular or even-aged stands to create a balanced stand structure and to obtain natural reproduction. This method will be used no more than twice in any one stand. The residual stand will be managed by the single tree selection or group selection method during future harvests.

Commercial thinning (Intermediate): Well-stocked plantations with trees at eight to ten foot spacing need pre-commercial thinning at 15 to 25 years. One or more commercial thinnings can be expected in these stands after approximately 25-40 years.
Commercial thinning is the removal of trees in a stand to maintain or increase average stand diameter of the residual crop trees, promote timber growth, and/or improve forest health. The residual stand will consist primarily of healthy and vigorous dominant and co dominant trees from the preharvest stand. The residual stand will be managed by the single-tree selection or group selection methods during future harvests.

Sanitation-Salvage (Intermediate): Sanitation is the removal of insect attacked or diseased trees in order to maintain or improve the health of the stand. Salvage is the removal of only those trees that are dead, dying, or deteriorating, because of damage from fire, wind, insects, disease, flood, or other injurious agents. Salvage provides for the economic recovery of trees prior to a total loss of their wood product value. These methods will be used judiciously to also consider the commitment to retain forest structural characteristics such as snags and downed woody debris. Sanitation and salvage may be combined into a single operation.

Rehabilitation of Understocked Areas (Special): The rehabilitation prescription will be used for the purposes of restoring and enhancing the productivity of any forest land that does not meet the stocking standards defined in the California Forest Practice Rules.

Fuelbreak/Defensible Space (Special): Trees and other vegetation and fuels are removed to create a shaded fuel break or defensible space in an area to reduce the potential for wildfires and the damage they might cause.

Shelterwood (even-aged): The shelterwood regeneration method reproduces a stand via a series of harvests (preparatory, seed, and removal). The preparatory step is utilized to improve the crown development, seed production capacity and wind firmness of designated seed trees. The seed step is utilized to promote natural reproduction from seed. The removal step is utilized when a fully stocked stand of reproduction has become established, and this step includes the removal of the protective overstory trees. The shelterwood regeneration method is normally utilized when some shade canopy is considered desirable for the establishment of regeneration.

Seed tree (even-aged): The seed tree regeneration method can be viewed as a simplified version of the shelterwood method above. Using just the seed step, a number of mature seed bearing trees are left after harvest to ensure natural reproduction from seed. The overstory seed trees can be removed after new regeneration has become established, or they may be retained as legacy structure and habitat trees for the duration of the next generation of trees on the site. Older Seed Tree cuts on the forest have produced young stands with mixed species.

Clearcutting (even-aged): under this method, all trees on a harvest area is removed. Harvest areas are limited by the State forest practice rules to 20 acres with exceptions up to 30 acres under special circumstances.

Even-aged management at MHDSF has historically been used when the preharvest stand contained little or no understory trees. The resulting small clearcuts were usually less than ten acres in size with the majority of the “patch cuts” being under two acres. While this method maintains a soft, gap phase regeneration appearance and function, it is difficult to manage as a unit and would better be classified as group selection, an uneven-aged system. The majority of these patches at MHDSF have been neglected over time. The resulting edge effect often results in the planted species (predominantly pine) eventually succumbing to competition from more tolerant species.

Aesthetic issues that sometimes arise from clearcutting will be mitigated by the following methods: Harvest areas will be designed to mimic natural features such as fires and wind storms, in order to avoid abrupt straight boundaries. Units will be planned to maintain the wildlife habitat characteristics of the preharvest stand. Clearcut openings will be staggered on the landscape so as to maximize the connectivity of interior forest conditions, thereby allowing for wildlife migration. The clearcutting prescription will be used in a balanced mix of prescriptions to maintain a spatially diverse forested landscape.

Clearcutting will only be used in areas where soil erosion or other harmful environmental impacts can be avoided. Units will be planned on stable ground, where slopes generally do not exceed 40 percent. Clearcut openings will be located outside of WLPZs unless the harvest is for certain experimental reasons. Slash will be lopped to minimize negative aesthetic impacts. Brush will be controlled to maintain site productivity and protect the developing stand from fire. This shall be accomplished by hand piling and burning, grubbing, mastication, and/or chemical treatment.

Clearcutting will be used on a limited portion of the Forest acreage. It will primarily be utilized where it is necessary to create gaps to establish regeneration, in connection with natural catastrophic events, such as fire, severe disease or insect damaged areas, or windthrow; or for research purposes. The clearcutting prescription will typically be used in the following situations:

- Promote species composition back to more intolerant species as was present historically.
- Rehabilitate stands that have been severely damaged by fire, insects, disease or weather.
- Conduct experiments on regeneration methods (natural and artificial) for giant sequoia.
- Restore a stand that has been “high-graded”.
- Study different spacing regimes and management strategies to obtain optimal growth of high quality timber products.
- Transition to species more resilient to climate change.

- Demonstrate that properly planned, implemented and maintained harvest areas exhibit accelerated growth rates, are less costly to harvest, reduce fuel loads, protect water quality, enhance wildlife habitat, and aid in creating a landscape level mosaic of various forest attributes while being aesthetically pleasing.

Variable Retention (Special): Variable retention is an approach to harvesting based on the retention of structural elements or biological legacies (trees, snags, logs, etc,) from the pre-harvest stand for integration into the post-harvest stand to achieve various ecological and social objectives. The major variables in the variable retention harvest system are retention types, densities, and spatial arrangement of retained structures.

Alternative Prescriptions: An alternative prescription will be used when, in the judgment of the Forest Manager, it offers a more effective or more feasible way of achieving the management objectives than any of the standard silvicultural methods provided in the Forest Practice Rules.

Cutting Cycles

Research projects may investigate any range of different cutting cycles. For management purposes outside of specific research projects the cutting cycle on the Forest has been approximately 30 years. The cycle will need to be adjusted as stand structure changes due to harvesting, mortality, vigor, and fuels reduction projects. It may be reduced to 10 years in some areas to create research opportunities in managed forest conditions that are representative of private land ownerships in the area.

The shorter harvest cycle would tend to decrease the size of harvested areas, concentrate visual impacts to smaller areas, reduce mortality by removing high-risk trees more frequently, and make timber sales more manageable. The continuing goal is to maintain a healthy, vigorous forest that is aesthetically pleasing with a diverse assemblage of stand structures.

Plantation Management

Well stocked plantations with trees at eight to ten foot spacing need to be pre-commercially thinned at 8 to 15 years after planting. One or more commercial thinnings can be expected in these stands after approximately 25 to 40 years. The management of these plantations will vary, depending upon the plantation age, stocking level, site class, competing vegetation, and overall health of the trees. Plantation management activities will include, but not be limited to, pruning to improve log quality, pre-commercial thinning to maintain growth and remove defective trees, remove competing vegetation, control pests, inter-planting and possibly rehabilitation.

Brush shall be controlled to maintain site productivity and protect the developing stand from fire. This shall be accomplished by hand piling and burning, grubbing, mastication, and/or chemical treatment. Should herbicides be used as a site preparation or release treatment, a Pest Control Advisor shall be utilized to prepare an appropriate recommendation and a holder of a Qualified Applicators License will oversee the application of chemicals. All herbicide applications will comply with the herbicide label and the PCA's recommendation. Herbicides may also be used to maintain areas that have been designed to function as fuel breaks.

Invasive Species Management

Non-indigenous plants shall be managed by monitoring the forest and inspection of products (mainly erosion control) that may be introduced to the forest. Such plants may be accidently introduced by the public or a contractor to the forest. It shall be forest policy that all heavy equipment be cleaned and inspected before transport to MHDSF. This shall include logging and excavation equipment. Horses are not allowed within the campground areas to prevent the introduction of weeds from various kinds of feed (among other things). Should invasive plants be discovered at MHDSF, they will be treated with herbicides to prevent spread. Treated areas will

be monitored to insure that seed does not germinate and the plants do not proliferate. Herbicide treatment shall be performed as outlined above in the Plantation Management discussion.

Sustainable Harvest Levels

The annual volume of timber harvested between 1946 and 1973 averaged 2.2 MMBF, with a large amount of old growth remaining and the stocking and volume grown remaining constant. Figure five shows harvest history on the Forest from 1990 to the present.

The long term sustainable harvest levels for the Forest, while accounting for limits on productivity due to constraints imposed from consideration of other forest values[5], is between 2.4 and 3 million board feet per year, depending on silvicultural methods used. The unrestricted sustainable harvest level on the Forest is approximately 4.4 million board feet per year.

Logistical considerations, such as the demand for logs from the local sawmill and limiting impacts on recreation from logging operations, is expected to influence the harvest levels in any given year. The harvest level may also vary from year to year to permit salvage of some of the younger large diameter trees, especially the sugar pine, insect-killed trees, fuel reduction treatments, and stand sanitation to maintain a healthy, vigorous forest.

Harvest Methods

Ground skidding equipment will continue to be the main yarding system utilized on the forest. This system has the advantages of being able to utilize existing roads and skid trails, resulting in associated reduced costs and environmental impacts that would be associated with new road construction. Areas potentially suitable for cable yarding are believed to exist in the North Fork of the Middle Fork of the Tule River and will be investigated in the future as opportunities arise.

Markets for Forest Products

The uncertain economy, decreased demand for lumber, increased regulation, and dedication of forestland to non-timber uses has significantly reduced the number of available mills within an economically-viable hauling distance of the State Forest.
Currently, Sierra Forest Products has the only major sawmill in Tulare County. It is located in Terra Bella, 46 miles away. One small sawmill in the local area provides a market for salvaged timber.

Forest Products

Dead and Down Material – The forest contains a considerable amount of dead and down giant sequoia. This material consists of various sizes and types of material, ranging from smalls pieces and waste from logging operations 100 years ago to recent wind-thrown trees of various ages. Because of the remarkable decay resistance of the giant sequoia heartwood, some of the material may have fallen 500 years ago and still be marketable.

[5] Recreation, watersheds, wildlife, range and forage, fisheries, regional economic vitality, employment and aesthetic enjoyment.

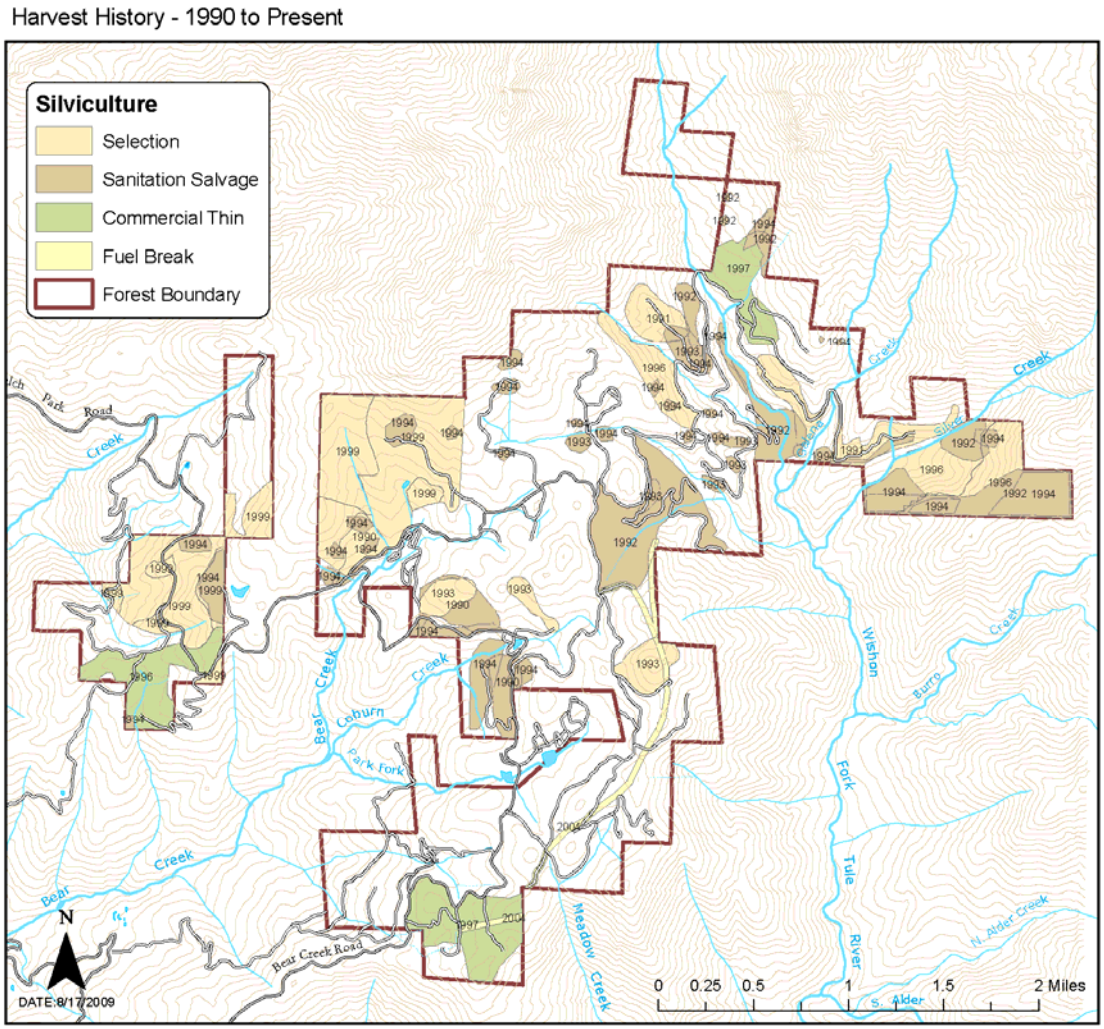

Figure 5. Harvest history on Mountain Home from 1990 to the present.

Some of the down material includes logs of special scenic, historical, or research value. All down giant sequoia that has historical, scenic, or research value should be protected. Therefore, any material that is sold must be approved by the Forest Manager.

From 1974 to 1978 a cruise was done of all down material. Size, type, and condition of the material were recorded and volumes were calculated in cubic feet. The logs were numbered and plotted on maps. This information is updated periodically to document new wind-thrown trees and harvested material.

The inventory of dead and down material increases with time as trees are lost to natural causes. Since State acquisition, wind throw tends to down one or two trees per year. This figure validates the calculated loss estimates based on the number of standing old growth trees and their life span of over 3000 years.

Dead and down giant sequoia has been sold to private operators through small sales since 1946. Total volume removed from the forest from 1946 to 2001 was 5,165 thousand board feet. Downed material has also been utilized by State Forest staff on a regular basis. Mountain Home Conservation Camp harvests this material for manufacturing signs, lumber and displays that are used at Department facilities statewide.

Dead and down sequoia is still available for purchase at MHDSF with a Class I timber sale permit. Given the sheer size of the logs and chunks from which the lumber or split products are derived, there are few sales of old-growth material from the forest. Recognizing the ecological value of large down sequoia logs, we have limited the sales of down sequoia logs not to exceed 2 MBF per purchaser per year. MHDSF sells an average of 4 MBF of down logs per year. We will continue to monitor the removal of down sequoia logs. If necessary, limits will be restricted further to ensure that removal of down sequoia logs at all times remains an insignificant portion of the inventory. With accumulation far exceeding utilization, there will continue to be an abundance of down sequoia logs at MHDSF.

Fuel wood – Demand for fuel wood from the State Forest declined steadily this past decade. Fuel wood permits have remained constant with 20 to 25 permits issued per year. In recent years, fuel wood cutting has been limited to dead and down wood only.
At the current level of cutting, the supply of wood exceeds demand. Allowing fuel wood cutting on the forest is desirable for reducing fire hazards along roads and cleaning up slash in harvested areas. We should continue to encourage the removal of dead and down fuel wood for commercial or personal use through the existing Class I timber sale permit process. Fuel wood can also be collected by the public for use at Mountain Home campgrounds without a permit.

Salvage – Prompt removal of salvage logs is important in order to utilize recently dead or damaged trees before the wood deteriorates. Standing dead timber left in the woods for more than one year seriously degrades in value. Efforts should be made to sell this timber as quickly as possible. State policy allows for the removal of 100 MBF or $10,000 worth of timber on a small sales basis without a formal bid process. This is the most expedient way to remove salvage trees quickly and should be used as much as possible.

Incidental sales of miscellaneous products will be made as conditions warrant and markets permit.

VI OTHER FOREST MANAGEMENT VALUES

Fisheries

Trout occur in the larger streams and ponds on the State Forest. During summer months the California Department of Fish and Game stocks the three man-made ponds in the forest and Balch Park. These ponds are stocked with catchable rainbow trout (*Salmo gairdnerii*), and constitute a “put and take” fishery with heavy fishing pressure and few fish that carry over to the winter. Various species of minnows and shiners have also become established in these ponds.

Streams on the forest containing trout include: Bear Creek below Frasier Mill Campground; Coburn Creek below Hedrick pond; Park Fork of Bear Creek below Balch Park; North Fork of the Middle Fork of the Tulare River; and Galena and Silver Creeks below 6000 feet elevation. The North Fork of the Middle Fork of the Tulare River is stocked with rainbow trout periodically during the summer. All other streams contain self-sustaining native populations. Rainbow trout (*Salmo gairdnerii*) and brown trout (*Salmo trutta*) are found on Mountain Home.

The desired future condition for watersheds and fisheries includes maintaining or improving current riparian conditions and in-stream habitat. Degradation of the fisheries can occur if stream or pond environments are altered by recreational use, litter, timber harvesting or road construction. The following general guidelines for watershed and fisheries resources will be adhered to on Mountain home:

1) Adequate watercourse protection shall be incorporated in timber sales adjacent to fisheries. Overstory and understory vegetation shall be retained in sufficient amounts within watercourse protection zones so that water temperatures will not increase.

2) Deposition of any substances in streams or ponds that will degrade fish habitat shall be avoided.

3) Road crossings of fish bearing streams must be designed to allow fish passage.

4) Allow for the natural recruitment of large woody debris to the stream channel to improve or maintain in-stream habitat quality and stream ecosystem function.

5) Minimize the number of temporary watercourse crossings.

6) Dredge Hedrick and Upper Balch Pond as needed to improve water depth, clarity, and oxygen content.

Wildlife and Plants

Due regard will be given to the conservation or enhancement of wildlife values during management activities at MHDSF. There are two existing primary California Wildlife Habitat Relationship (CWHR) System habitat types on MHDSF: Sierran mixed conifer and true fir. The Sierran mixed conifer habitat type consists primarily of ponderosa pine (Pinus ponderosa), giant sequoia (Sequoiadendron giganeum), incense cedar (Calocedrus decurrens), white fire (Abies concolor) and sugar pine (Pinus lambertiana), and is located throughout MHDSF The true-fir habitat type is located at the higher elevations in the northeaster section of MHDSF and consists of a mix of both red and white fir. Brush, rock or meadows cover approximately 0.5 percent of the total land base.

Hunting, urbanization, and resource extraction have the potential to have adverse impacts to wildlife and their habitats in the State Forest. MHDSF is open to hunting in accordance with State Fish and Game laws and Section 4656 of the Public Resources Code.. Although the management of MHDSF has little control over hunting pressures, placed on wildlife and their habitat, which is regulated by DFG, it does have a responsibility to consider the maintenance and enhancement of biological diversity when proposing forest management projects. Biological diversity can be defined as the variety and variability of living organisms and the ecological complexes in which they occur. Biological diversity is an important ecosystem characteristic for a variety of ecological, economic, and aesthetic reasons. For snag recruitment, on a case by case basis, trees larger than 40 inches DBH (currently 0.2 per acre on average) will be evaluated for retention based on aesthetic, wildlife, and genetic values.

The development of MHDSF as a true all-aged forest will provide for a more biologically diverse habitat than is found in the current predominantly young forest. A variety of silvicultural systems will be used. Single tree selection, group selection, commercial thinning, and sanitation-salvage harvesting will improve the forest habitat by developing and maintaining a variety of crown levels, stand densities, and small openings in at MHDSF. Group selection openings will provide habitat for wildlife species that prefer and need edge cover. The openings themselves will provide feeding habitat for rodents and the predators that feed on the rodents. The multilevel forest canopy will provide habitat for the wildlife that lives in the various levels of the forest canopy. The variable crown canopy density will allow varying amounts of light to reach the forest floor which will determine the amount and types of vegetation which may grow on the forest floor and provide cover, food, and shelter for wildlife that utilizes the forest floor.

Critical wildlife habitat elements that are considered during project and forest management related activities include snags, large woody debris, decadent trees, plus hardwood, aquatic and riparian habitats. Each of these elements provides unique opportunities for wildlife foraging and reproduction that occurs within a sustainable, healthy forest ecosystem. Forest managers at MHDSF regularly monitor snags, hardwoods, and LWD during timber inventories. Projects developed for THPs or recreation consider these elements in the planning processes prior to implementation. High consideration is given to ensure that the most diverse array of wildlife habitats will be created, enhanced or maintained across the landscape.

Special Habitat Types

Big Trees Forest: The Big Trees Forest community of giant sequoias present at MHDSF has priority management objectives in research, recreation and forest management goal implementation. The overall ecological objective is to protect the current forest status and ensure that the giant sequoias at MHDSF will regenerate, maintain their existing overall ecosystem health and sustain growth and replacement numbers in the future. Further information is included in the research, recreation, and forest management sections.

Oaks: Hardwoods and California black oaks in particular, have been identified as a special management habitat element due to the wildlife foraging benefits and reproductive habitat (crevices, foliage) that these trees provide. Hardwoods, as a general practice, are retained at MHDSF, unless they pose a safety hazard. Hardwoods are also included in the discussion under forest and research management.

Meadows: Meadows at MHDSF are often associated with springs at MHDSF and provide excellent foraging and reproduction opportunities for wildlife and add to the diversity of forest habitats over the landscape. General meadow management practices include removal of encroaching confer species, and riparian protection and restoration opportunities. Meadows at MHDSF are identified further in the forest management section.

Riparian Hardwoods: Riparian habitats have established protections defined in the Forest Practice Rules under Watercourse and Lake Protection (14 CCR 916.4 [936.4, 956.4]). Also refered to as Watercourse and Lake Protection Zones, the provide additional cover, stormwater provisions, fish habitat, and wildlife corridors between managed and unmanaged forest vegetation types. Additional protections, if identified for forest health, sensitive plants or animal species assessed during management activities, will be developed in coordination with DFG as necessary.

Chaparral/Shrub Habitats: Chaparral habitats provide unique foraging and refuge opportunities for numerous wildlife species. Management for forest health and diversity includes identifying key shrub habitats that provide the added diverse habitats that increase opportunities for wildlife foraging and nesting habitats.

Rocky/Open (Primary Succession) Habitats: Open, rocky habitats and talus slopes provide unique habitats for reptiles, mollusks, invertebrates and a number of denning wildlife species. Management for rocky habitats increases forest diversity and health by offering additional wildlife foraging and reproductive opportunities within the forest area.

Mitigation Measures

Timber harvest activities on the State Forest could adversely impact biological resources, but such impacts can be avoided or reduced to less than significant impacts through mitigations. Some impacts of timber harvest activities are beneficial and enhance biological resources. The following mitigations will be followed to ensure that any impacts will be less than significant:

1. Utilize a wide range of management tools which will continue to maintain a landscape that is varied and has a mixture of various wildlife habitats. Mountain Home, as a multiple aged forest, including old growth giant sequoia, provides for a more biologically diverse habitat than is found in a predominantly young managed forest. The use of a variety of silvicultural systems will improve forest habitat by developing and maintaining a variety of crown levels, stand densities, and small openings in the forest. A management strategy of maintaining a variety of forest types and habitats provides a robust ecosystem that is resilient to disturbance and can mitigate impacts to less than significant.

2. Maintain, restore, and enhance the occurrence of special habitat elements and unique habitats to promote species diversity and habitat quality. It is anticipated that potential project impacts will be less than significant on species identified as a candidate, sensitive, or special status species.

3. Individual projects conducted under the guidance of this management plan will require a separate biological assessment based upon site-specific conditions. If during the project assessment, survey or project layout, species identified as candidate, sensitive, or special status or their habitats are identified, the management plan specifies that protection measures will be incorporated into the project. Protection measures will be developed in consultation with appropriate State or Federal wildlife agencies.

4. Incorporate protection measures for all riparian areas or other sensitive natural communities. Protect all natural wetlands, springs and ponds on the Forest.

5. Plan for additional pond construction where desirable.

6. Retain sufficient amounts of overstory and understory vegetation within watercourse protection zones so that water temperatures will not increase, and to provide other biological benefits. Allow for the natural recruitment of large woody debris to the stream channel to improve or maintain in-stream habitat quality and stream ecosystem function. Avoid deposition of any substances in streams or ponds that will degrade fish habitat. Design road crossings of fish-bearing streams to allow fish passage.

7. Design forest management activities based on criteria that include horizontal and vertical forest structure, vegetation density, edge effect, corridor size, and biological diversity, in order to allow unrestricted movement of wildlife species.

Management Guidelines

MHDSF will work to restore, maintain, or enhance the occurrence of special habitat elements and unique habitats to promote species diversity and habitat quality. Measures to achieve this include:

1. Minimize the number of temporary watercourse crossings.

2. Dredge Hedrick and Upper Balch Pond as needed to improve water depth, clarity, and oxygen content.

3. Retain oaks that produce quality mast.

4. Native grasses will be planted on landings and skid trails planned for re-use to provide an additional food source for wildlife.

5. Roads not needed for management access will be closed in certain areas to reduce wildlife disturbance.

6. Retain or enhance desirable brush species in the understory.

7. Enlarge meadows by removing encroaching trees and other vegetation.

8. Retain snags and down wood material as allowed by the Forest Practice Rules. Attempt to maintain a minimum of three snags and three dead and down logs per acre in recently harvested areas.

9. Protect and restore riparian zones.

10. Protect sensitive fauna and flora known to occur on the Forest.

11. As far as possible, utilize the existing road system thereby avoiding the need for new road construction.

Wildlife habitat enhancement opportunities are identified during the planning and implementation of timber sales, demonstration and education activities, and recreational facilities. We will incorporate control or eradication of exotic plant species into management activities, as opportunities are identified.

Several management goals of MHDSF describe the need to maintain the widest possible diversity of managed forest stands in different successional stages, maintain or increase functional wildlife

habitat, and provide research and demonstration opportunities for various biological resources. One of the goals of MHDSF is to balance sustained timber production with the long term biological productivity of the land and protection of public trust resources. The forest management program under the guidance of this plan is expected to produce a moderate perpetually sustainable harvest level. Because approximately 40 percent of the current standing inventory by volume is protected old growth giant sequoia, the need to maintain the widest possible range of successional stages for research, and the need to maintain an attractive recreation destination, it follows that timber harvest rates will be lower than that of most comparable managed timberlands.

Watercourses will be provided protection measures that will meet or exceed the Forest Practice Rules. The buffer zones will assist in achieving the goals of MHDSF by providing filter strips for sediment and migration corridors for wildlife.

MHDSF staff individually mark all harvest or leave trees. MHDSF maintains a marking guide to assist personnel in the marking of timber for timber sales. This management measure ensures that all trees will be evaluated for the presence of nesting structures, potential snag and LWD recruitment, and the existence of any other special habitat elements. It is also CAL FIRE policy that all harvest trees or leave trees are to be marked.

As funding allows, MHDSF plans to continue to conduct various wildlife inventory studies to improve our knowledge of wildlife species habitat use and improve the detection of rare, threatened, or endangered species. All detections of rare, threatened, or endangered species will be documented and assessed to determine if these biological resources are being impacted by any projects conducted under the guidance of this Management Plan.

Initial Biological Scoping

The tools used to identify potentially occurring sensitive plant communities, or sensitive wildlife or plant species and their associated habitats within the vicinity of Mountain Home Demonstration State Forest (MHDSF) includes the California Natural Diversity Database (CNDDB), USFWS species lists, the California Native Plant Society database, the 2003 Mountain Home Management Plan species list, the California Wildlife Habitat Relationships System (CWHR) and the USFS Sierra National Forest biological resources database. A nine quadrangle query of the CNDDB was conducted which included the Camp Wishon 7.5 minute quad and the surrounding eight quads.

Appendix C identifies species that may occur at MHDSF, their listing status, habitat type, and whether they have the potential to occur at MHDSF. A detailed discussion of species in appendix C that are formally listed or candidate listed and known to occur on MHDSF is provided below. It is the intent of MHDSF to avoid potential significant impacts by developing biological resource management strategies that are compatible with other management strategies identified for recreation and sustainable forestry.

Wildlife Species of Concern

A nine quad search of processed CNDDB data centered on the Camp Wishon quad identified 3 bird, 6 mammal, 1 reptile, 2 amphibian, 2 fish and 3 insect species of concern. These include Sierra Madre (or Southern Mountain) yellow-legged frog *(Rana. muscosa*)(Federal candidate in the southern Sierra Nevada), Foothill yellow-legged frog *(Rana boylii*)(CDFG Species of Special Concern), western pond turtle *(Actinemys marmorata)(*CDFG Species of Special Concern) and Pacific fisher *(Martes pennanti)*(State candidate threatened).

Other wildlife species of concern noted on the 9 quad CNDDB search include: Little Kern golden trout *(Oncorhynchus mykiss white)*(Federal threatened), Black Swift *(Cypseloides niger)*(CDFG Species of Special Concern), Western mastiff bat *(Eumops perotis californicus)*(CDFG Species of

Special Concern), palid bat *(Antrozous pallidus)*(CDFG Species of Special Concern), California wolverine *(Gulo gulo)*(State threatened), Sierra Nevada red fox *(Vulpes vulpes necator)*(State threatened). The American badger *(Taxidea taxus)*(CDFG Species of Special Concern) while not noted on the CNDDB query is expected to occur per the CWHR System (species life history note and distribution map).

The following is a discussion of the life history requirements and potential protection measures for species that are formally/candidate listed and occur or potentially could occur on the Forest. If, during implementation of individual projects such as timber harvest plans, other species than those discussed here are encountered, determination of specific habitat needs and protection measures on the Forest will be made in consultation with the Department of Fish and Game biologists.

California Spotted Owl:

The NDDB revealed the presence of two California spotted owl territories within the biological assessment area. The records indicate that the sightings were made in 1991 and 1992. Surveys conducted at MHDSF in 2003 yielded five spotted owl areas. Two of the sightings were in the biological assessment area within the Upper North Bear Creek watershed. The remaining occurrences were in the Rancheria Creek and Silver Creek watersheds and are over two miles from the project area outside of the biological assessment area. Only one of the Upper North Bear Creek occurrences is located closer than 1 mile of the project area. Carlson (2006) noted California spotted owls in the vicinity of Deer Ridge and Long Meadow on Federal land adjacent to MHDSF.

Life history and habitat requirements: California spotted owls are an uncommon, permanent resident in suitable habitat. In this part of the Sierra Nevada it resides in dense, old-growth, multi-layered stands of mixed conifer, and oak-conifer habitats. This species requires mature forest stands with large trees and snags. It is very sensitive to habitat destruction and fragmentation. The owl's breeding range extends west from the Cascades through the North Coast ranges, the Sierra Nevada, and in more localized areas of the Transverse and Peninsular Ranges. It may move downslope in winter along the eastern and western slopes of the Sierra Nevada.

The species breeds from early March through June. It produces one brood per year, with a clutch size of 1 to 4, usually 2. Young owls may not be sexually mature for 3 years. A pair may use the same breeding site for 5-10 years but may not breed each year. The species usually nests in tree or snag cavities, or in broken tops of large trees. Less frequently it will nest in large mistletoe clumps, abandoned raptor or raven nests, in caves or crevices, on cliffs or on theground. Mature, multi-layered forest stands are required for breeding. Nests are generally located 30 to 180 feet above the ground. It requires blocks of 100-600 acres of mature forest with permanent water and suitable nesting trees and snags. This species tends to prefer narrow, steep-sided drainages with north aspects.

Protection measures: in the event this species is observed at MHDSF, Department of Fish and Game protection measures will be implemented for this species where it occurs.

Northern Goshawk:

Northern Goshawks breed in the North Coast Ranges, throughout the Sierra Nevada, Klamath, Cascade, and Warner mountains, and possibly in the San Jacinto, San Bernardino, and White Mountains. Northern Goshawks initiate breeding by mid-June in northern California. Nest construction can begin as early as two months before egg laying. Nests are constructed and many pairs will have two to four alternate nest areas within their home range. One nest may be used in sequential years, but often the pair switches to an alternate nest. The young fledge within 45 days and begin to hunt within 50 days. Only one brood per season is produced. After fledgling, the family group stays together and remains in the general vicinity of the nesting territory. This post-fledging area tends to be larger than the nesting territory. The diet of Goshawks consists

mostly of birds (from robin to grouse in size), though small mammals such as ground and tree squirrels are also taken.

Throughout its range, the Northern Goshawk forages in diverse habitat, which can vary from open sagebrush to dense forests. However, in California mature and old growth forest with dbh greater than 20 inches (52 cm) and canopy closure greater 40 percent was used for foraging, and open habitats such as meadows and seedling or sapling stands were avoided. Carlson (2006) noted two Northern Goshawk nest sites on Mountain Home Demonstration State Forest in the vicinity of Hedrick Pond and within Section 34.

Department of Fish and Game protection measures for this species (California Department of Fish and Game 2009) will be implemented for this species where it occurs.

Golden Eagle:

Golden Eagles occur throughout California except in the Central Valley. Nesting by Golden Eagles typically occurs on cliffs or large trees in rugged open areas such as canyons and escarpments. Foraging occurs in open terrain such as grasslands, deserts, sage-juniper flats, and savannas, early successional stages of forest and shrub habitats, desert edges, farms, or ranches. Golden Eagles hunt over large open areas and feed on a variety of lagomorphs, other mammals, birds, reptiles, and occasionally carrion.

Although no cliffs occur on MHDSF, Golden Eagles could nest in older conifer and mixed conifer stands. Should the species occur on the State Forest, consultation with Federal and State wildlife agencies concerning appropriate protections would be initiated.

Pacific Fisher:

Pacific Fishers exhibit a discontinuous distribution in Washington, Oregon, and California from the more continuous populations of Canada and the eastern United States. Observations compiled between 1961 and 1982 show fishers occurring in the northwestern portion of the state and throughout the Sierra Nevada Mountains. Recent survey information indicates that the current distribution of fisher in California is now smaller with a gap between the northwestern population and the Sierra Nevada population (Zielinski et al. 1995). Currently, the primary threat to the Pacific fisher is the reduction and fragmentation of late-successional forests, and the associated loss of habitat components necessary for resting and denning.

Breeding, resting, and foraging habitat for Pacific fisher usually consists of old-growth or late successional coniferous forests with greater than 50 percent canopy closure. Denning and resting occur in live trees with cavities, snags, downed logs, and a variety of other cavities. Young are born between February and May. In northern California, natal and maternal dens have been found in medium to large (21 to 58 inches dbh) live trees and snags, and in a 39-inch downed log. Riparian areas serve as travel corridors for Pacific fishers. Although Pacific fishers tend to avoid open areas with less than or equal to 40 percent canopy cover, they are known to use heavily harvested riparian areas for travel.

Protection measures: in the event this species is observed at MHDSF, we will follow Department of Fish and Game guidelines for protection measures for this species (Department of Fish and Game 2009).

Foothill Yellow-legged Frog:

Range: Rana boylii is endemic to Oregon and California. Historically, foothill yellow-legged frogs ranged throughout the western slopes of the Sierra Nevada south to Kern County. They range from near sea level to 5,800 feet in California.

Foothill yellow-legged frogs have declined dramatically in the Sierra Nevada. Lanoo (2005) speculates that air-borne pesticides (that move east on the prevailing winds blowing across the highly agriculturalized Central Valley) are likely to be the primary threat to foothill yellow-legged frogs in the Sierra Nevada foothills. The populations of foothill yellow-legged frogs in greatest decline are all downwind of highly impacted (mostly agriculturalized) areas, while the largest, most robust frog populations are along the Pacific coast.

Life history and habitat requirements: In the southern Sierra Nevada populations, breeding may occur later after the snows melt from April to July. Foothill yellow-legged frogs mate and lay eggs exclusively in streams and rivers. Tadpoles typically transform after 3 to 4 months.

Foothill yellow-legged frogs are primarily stream dwelling. Stebbins (2003) describes foothill yellow-legged frogs as stream or river frogs found mostly near water with rocky substrate, as found in riffles, and on open, sunny banks. Critical habitat (i.e., habitat suitable for egg laying) is defined by Jennings and Hayes (1994a) as a stream with riffles containing cobble-sized (7.5 cm diameter) or larger rocks as substrate, which can be used as egg laying sites. These streams are generally small to mid sized with some shallow, flowing water.

Habitat Protection: This species may occur in suitable habitat at lower elevations on the Forest, but extant populations are unknown. Given this species' close association with streams and rivers, establishment of watercourse and lake protection zones as described in the Forest Practice Rules are expected to provide the necessary habitat protection. However, on identification of the species on the Mountain Home Demonstration State Forest site specific protection measures will be developed that potentially exceed those described in the Forest Practice Rules.

Sierra Madre (Southern Mountain) Yellow-legged Frog:

Rana muscosa is endemic to California, U.S.A. The Southern Mountain Yellow-legged Frog once ranged from Palomar Mountain in San Diego County through the San Jacinto, San Bernardino and San Gabriel Mountains of Riverside, San Bernardino and Los Angeles counties in southern California. These formed four isolated clusters of montane populations. In addition the species occurred as an isolated cluster of populations on Breckenridge Mountain, south of the Kern River in Kern County, and in the Sierra Nevada mountains in Tulare, Inyo, and Fresno counties, extending north to Mather Pass. The distribution of Rana muscosa in the Sierra Nevada is bordered by the crest of Sierra Nevada. No populations occur east of the crest. The mountain ridges that separate the headwaters of the South Fork Kings River from the Middle Fork Kings River, from Mather Pass on the John Muir Trail to the Monarch Divide, form the northern border of the range. R. muscosa is extinct on Palomar and Breckenridge mountains.

This amphibian species complex including Rana muscosa and Rana sierrae was once the most common vertebrate in the high elevation Sierra Nevada. Rana muscosa have declined dramatically despite the fact that most of the habitat is protected in National Parks and National Forest lands. A study that compared recent surveys (1995-2005) to historical localities (1899-1994; specimens from the Museum of Vertebrate Zoology and the California Academy of Sciences) found that 96.2% of populations had gone extinct, with only 3 remaining out of 79 resurveyed sites (Vredenburg et al. 2007). The two most important factors leading to declines in R. muscosa are introduced predators and disease.

Life History and Habitat Requirements: In the southern Sierra Nevada populations, breeding may occur later after the snows melt from May to July. Fertilization is external. A cluster of eggs is laid in shallow water and is left unattached in still waters, but may be attached to vegetation in streams. Tadpoles in the Sierras may overwinter, possibly taking as many as 3 or 4 summers before they transform.

The species inhabits lakes, meadow streams, isolated pools and sunny riverbanks in the Sierra Nevada. Open stream and lake edges with a gentle slope up to a depth of 5-8 cm. seem to be

preferred that range in elevation of 984 ft. to over 12,000 ft. (370 - 3,660 m.). In the Sierra Nevada, adult mountain yellow-legged frogs occupy wet meadows, streams, and lakes; adults typically are found sitting on rocks along the shoreline, usually where there is little or no vegetation. In the Sierra Nevada, most frogs are seen on a wet substrate within 1 m of the water's edge. Both adults and larvae are found most frequently in areas with shallow and warmer water.

Although unlikely, the Mountain Home Demonstration State Forest may support a population of this now uncommon species. The California Natural Diversity Database notes two occurrences from 1904 in Sequoia/Kings Canyon National Park at the Middle Fork Tule River and Summitt Lake. Given this species' close association with wet areas, establishment of watercourse and lake protection zones as described in the Forest Practice Rules are expected to provide the necessary habitat protection. However, on identification of the species on the Mountain Home Demonstration State Forest site specific protection measures will be developed that potentially exceed those described in the Forest Practice Rules.

Sierra Nevada Red Fox:

The Sierra Nevada Red Fox (Vulpes vulpes necator) is a State Threatened species. Range: Grinnell (1937) described the distribution of the red fox as occupying "high elevations throughout the Sierra Nevada from Tulare County to Sierra County, and the vicinities around Mt. Lassen and Mt. Shasta. The current range and distribution of red fox is unknown. The only known current population is in the vicinity of Lassen Peak, with periodic sightings by inexperienced observers throughout its historic range.

It is highly unlikely that the distribution of the Sierra Nevada red fox would include Mountain Home Demonstration State Forest. However, should the species occur on the State Forest consultation with Federal and State wildlife agencies concerning appropriate protections would be initiated.

Wolverine:

The wolwerine is a State Threatened species. Verifiable wolverine sightings in California are very rare. California wolverine sightings within the 9 quadrangle CNDDB search area are no more recent than 1973 where one occurrence is noted on Blue Ridge within the Dennison Peak quadrangle near the Milo Fire Station. Earlier sighting include an observation in 1970 at the Quinn Ranger Station in Sequoia/Kings Canyon National Park; a 1962 observation on the Sequoia National Forest (T19S R31E Section 27); and a 1907 observation of wolverine sign by Grinnell at Grouse Flat 8 miles southeast of Lake Kaweah. In February 2008 a remote camera captured the image of a wolverine on the Tahoe National Forest, an area from which the species was believed to be extirpated since 1922. Genetic studies of this individual indicate that it is most closely related to Rocky Mountain populations, the nearest being 600 miles away in the Sawtooth Range of Idaho.

Should the species occur on the State Forest consultation with Federal and State wildlife agencies concerning appropriate protections would be initiated.

California Condor:

The California Condor *(Gymnogyps californianus)* is State and Federal endangered. Mountain Home is within the range of the California Condor, and the species has been known to historically occupy giant sequoia (Snyder et al 1986), however tree nesting by the species is thought unlikely given present numbers and habitat utilized. All recent California Condor nest sites have been located on public lands within the Los Padres, Angeles, and Sequoia National Forests.

California Condor are not known from Mountain Home Demonstration State Forest. The California Natural Diversity Database does note however an important roosting area typically utilized from April through September on Blue Ridge within the Frazier quadrangle west of the

State Forest. Should the species occur on the State Forest, consultation with Federal and State wildlife agencies concerning appropriate protections would be initiated.

Terrestrial Vertebrate Species Richness

The California Natural Diversity Data Base (CNDDB) and the Spotted Owl Database are based on actual observations of rare plant and animal species and communities statewide with the goal of providing the most current information available on the state's most imperiled elements of natural diversity. Consequently the data provided does not represent an exhaustive and comprehensive inventory.

In order to assess the likelihood of additional terrestrial vertebrate species of concern occupying habitats present within the Mountain Home Demonstration State Forest, the California Wildlife Habitat Relationships System was queried[6]. Types and extent of CWHR types on MHDSF are shown in table 1 below. Inclusion of other uncommon habitat conditions on the forest such as pond, emergent wetland, chaparral brush etc. would add to the species list. The CWHR query yielded a total of 12 amphibian, 20 reptile, 127 bird and 68 mammal species.

Table 1. Mountain Home Demonstration State Forest CWHR habitat types and extent.

CWHR Type	Acres
MC5M	2771
MC5P	61
MHC4D	206
MHW4D	346
MHW5D	164
WFR4P	103
WFR5M	1177

Mountain Home is a research and demonstration forest, and we plan to continue to add to our knowledge of biological resources over time, and incorporate that knowledge into our management practices. An essential part of this adaptive management process is to collaborate with, and draw upon knowledge from neighboring landowners (Axtell and Terrell 2009).

Plant Species of Concern

A plant scoping assessment for the area including MHDSF is included in Appendix 1. A nine quad search of processed CNDDB data centered on the Camp Wishon quad and Mountain Home State Forest, identified 26 plant species. One plant species is listed as Federal threatened and state endangered (*Clarkia springvillensis*) and one state endangered (*Brodiaea insignis*). Twenty other species are considered CNPS List 1B species independent of the state or Federal listings described above. While it is unlikely that all or even most of these species would find suitable habitat on Mountain Home, the number of species provide a rough indicator of extent of plant species of concern in the general vicinity of the Forest. Additional survey effort for currently

[6] The California Wildlife Habitat Relationships System (CWHR) is the principal model used to predict species occurrence and change in habitat capability. Habitat capability in this context is an acreage weighted numerical expression derived from the arithmetic mean of habitat values for breeding, feeding, and cover for each species in each CWHR habitat stage. The CWHR System (http://www.dfg.ca.gov/whdab/html/cwhr.html) contains life history, management, and habitat relationships information on 675 species of amphibians, reptiles, birds, and mammals known to occur in California. The model was developed to predict species occurrence and abundance response to habitat alteration. Species prediction accuracy varies based on habitat types, taxonomic class, presence or absence of special habitat elements, and level of habitat relationship model validation. CWHR Version 8.2 was used.

undocumented species may add to this list or make additional adjustments specific to species occurring on Mountain Home.

Two plant species of concern are currently known from the southwest corner of the Mountain Home Demonstration State Forest (California Natural Diversity Data Base, accessed October 13, 2009). A botanical survey of MHDSF (Trayler and Mallory 1999) resulted in the discovery of Keil's daisy and Greenhorn fritillary. Both plant species are listed as California Native Plant Society List 1B.3 (California Native Plant Society 2009). The plants on List 1B are rare throughout their range with the majority endemic to California. Most of the plants have declined significantly over the last century. List 1B plants constitute the majority of the plants in CNPS' Inventory with more than 1,000 plants assigned to this category of rarity.

Fritillaria brandegeei - greenhorn fritillary. A perennial herb found only in California in lower montane coniferous forest on granitic soils and at an elevation of 5000-7000 feet. The species exhibits a blooming period of April-June.

Erigeron inornatus var. keilii - Keil's daisy. A perennial herb found only in California in lower montane coniferous forest within meadows or near seeps and at an elevation of 5900-7200 feet. The species exhibits a blooming period of June-September.

Protection Measures: surveys for plant species of concern will be conducted prior to implementation of individual projects. If any of the above species are encountered, a 50 feet no entry buffer will be flagged. No heavy equipment or herbicides will be used within the buffer. Directional falling away from the buffer will be implemented. The same protection measures will be used if other plant species of concern are encountered on individual projects.

Prescribed Burning

Prescribed fire is being used extensively in many giant sequoia stands to stimulate reproduction and reduce fuel loads. This is occurring mainly in parks, monuments, and wilderness areas where timber harvesting is not a management option. On the State Forest, timber harvesting provides the soil disturbance needed for giant sequoia reproduction. Prescribed burning may provide for increased production of natural giant sequoia seedlings, as well as serving to reduce the fire hazard from slash and facilitate planting in harvested areas. Prescribed fire was used experimentally in the Moses Mountain study area to compare giant sequoia reproduction following fire and logging activity. The results of this study were published in California Forestry Note #111, 1998.

The ability to use prescribed fire at Mountain Home is somewhat limited. Typically, burning is restricted in the local air basin until sufficient precipitation occurs in the fall. At MHDSF this precipitation often occurs in the form of snow which, depending on the amount, may deny access to the prescription areas. MHDSF has historically relied on the Tulare Unit to obtain burn permits and prepare environmental documents to comply with the Air Pollution Control Board (APCD) rules and regulations. Mountain Home should prepare these documents for all forest burning because the conditions at MHDSF are quite different from those experienced on the valley floor. This may increase the number of days available for burning at the forest.

The number of acres treated by fire will be dependant on the number of acres that are harvested or pre-treated by some method other than logging. It is reasonable to expect pre-fire treatments in the form of crushing, mastication, hand-piling, tractor piling, lopping, herbicide application or a combination of the above. During an average fall, under good climatic conditions, a prescribed burn resulting in 200 treated acres should be expected. However, this figure will tend to fluctuate from year to year.

Burning should be planned to occur following peak recreational activity so that smoke does not become a nuisance or threat to public safety. The nearest smoke sensitive area is Happy Camp, a small community of cabins and other forest dwellings with a population estimated to be about 25 individuals. The Mountain Home Conservation Camp is located 0.5 air miles west of the forest and Camp Wishon is located about 1.25 miles south. The prevailing winds usually direct smoke to the east.

Prior to the onset of winter weather, MHDSF will prepare and file a Smoke Management Plan with the Tulare County APCD. Burning shall only occur on permissive burn days or under a variance if one is granted by the APCD. Burning shall be done in accordance with the Smoke Management Plan and Forest Practice Rules (if applicable). Signage to notify the public of prescribed burning will be placed around the forest during burning.

Management Objectives:

1. Utilize prescribed fire to reduce fuel loads and provide a seedbed and heat to open giant sequoia cones.

2. Explore the use of broadcast burning for slash treatment and maintenance of shaded fuel breaks.

3. Utilize prescribed fire to maintain a fire resilient landscape within the bounds of Mountain Home Demonstration State Forest.

Training Opportunities

Mountain Home Demonstration State Forest provides a natural classroom for training. Training opportunities include all aspects of forest management, fire suppression, fire prevention, law enforcement, recreational studies, wildlife management, erosion control, hydrology, logging administration, logging, and road design. The following list of potential activities may occur at MHDSF as a training exercise. The list is not comprehensive and is intended to provide examples only.

Timber Felling	Fire-Line Construction	Heavy Equipment Operation
Meadow Restoration	Forest Practice Inspection	Road Maintenance
Crossing Installation	Erosion Control Methods	Campground Design
Trail Improvements	Pre Commercial Thinning	Proper Herbicide Use
Cone Collection	Wildlife Survey Methods	Public Speaking
Timber Cruising	Timber Marking	Log Scaling
Watercourse Protection	Archaeological Surveying	Site Protection Techniques

These are just examples of training opportunities that could be provided at MHDSF. These opportunities should be utilized whenever time and funding allows. It should be noted that many of these training categories could have an effect on the forest environment. Therefore, all training that takes place at MHDSF shall be done under the tutelage of a professional in any particular field.

Archaeological Resources

Starting in 1979, archaeological surveys of potential timber sale areas were performed by professional archaeologists and sites were recorded and protected. In 1982 and 1983 a seasonal archaeologist was hired to do a complete survey of the forest and record all known sites. Twenty-six sites were found and recorded during that major survey. To date, a total of 22 prehistoric and 14 historic sites have been recorded on Mountain Home. The prehistoric sites consist of bedrock mortars and basins, lithic scatters, and combinations of the three. The historic Euro-American sites consist mainly of early sawmill remains and trees and stumps with historic markings. Additional undiscovered sites are thought to occur throughout the forest.

These sites are extremely important forest resources. They are an irreplaceable source of information providing clues about the prehistoric and historic occupation of the area, as well as having education, aesthetic, and recreational values for forest visitors.

Management Objectives:

1. All known sites on the forest shall be protected during all management activities, especially road construction and logging. Procedures for protection of cultural resources will be followed; see Appendix for further discussion. Additional protective measures for specific sites may also be prescribed.

2. The cultural resource sites should also be managed for their educational information. Studies including surface collections, test excavations, site mapping and other projects should be encouraged when appropriate. The activities must be approved in advance by the CAL FIRE Archaeologist and the Forest Manager. Through archaeological study we will develop the interpretive value of these resources for the benefit of our forest visitors.

3. In general, there shall be a policy of allowing no collection of archeological artifacts and materials. When appropriate, commonly found specimens such as flakes, manos, pestles, pot shards, projectile points, shell objects, or bone tools may be collected and forwarded to a CAL FIRE Archaeologist for recording and analysis.

4. A public interpretive display should be developed and located at the Visitor Center or the State Forest headquarters. A pamphlet outlining the forest policy concerning collections and site protection should accompany the display. Artifacts recovered during previous surveys will eventually be curated on the forest, and can be used for public display and enjoyment. We want to encourage the public to enjoy, visit, and learn from the forest sites, but we also want to emphasize the rules that protect them. An artifact display could tend to encourage illegal digging and collecting if the policies were not also displayed.

5. Interpretive trails and signs at archaeological and historic sites should be developed and maintained. The location and wording used for the signs should be selected in consultation with the CAL FIRE Archaeologist in order to minimize potential losses from collecting, and to use accurate descriptive language.

Range Resources

The area of the State Forest has had a long history of livestock use dating back over 100 years. Extensive livestock use of the forest occurred until State acquisition in 1946. The effects of severe over-grazing were evident at that time, especially in meadow areas. Plant species composition had changed drastically in the meadows and the water table had dropped due to livestock trampling of stream channels. Drift fences were installed to end livestock access soon after State acquisition. No grazing permits have ever been issued by the State Forest, although

grazing has occurred over the years by stray cattle from adjacent US Forest Service grazing permit and nearby private land.

A grazing survey of the State Forest was completed in 1956. Ten years after the removal of livestock, the meadow areas showed marked recovery from past abuses. Forage values for both the forest and meadow ecosystems were estimated and the grazing capacity was calculated. The total forest grazing capacity was estimated to be 80 animal unit months (AUM), with 26 AUMs in the 37 acres of meadows and 54 AUMs in the forest areas. Since livestock tend to concentrate use in the meadow areas, the actual carrying capacity was given as 26 AUMs. Because of the low carrying capacity and the conflicts between grazing and the other uses of the State Forest (especially recreation), the report recommended that grazing not be allowed.

The range conditions on the State Forest have changed since 1956. An updated grazing study should be implemented to determine the current potential for livestock use. It is estimated that the carrying capacity has increased due to continued recovery from historic over-grazing.

In some forested areas grazing can be managed to control vegetation in young stands. Any livestock management would require fencing to restrict stock to desired areas. The potential benefits of potential increased tree growth from livestock control of vegetation on the State Forest is unknown.

The Balch Park Meadows, Methuselah Meadows, and Frasier Mill Campgrounds have all been constructed adjacent to prime grazing areas. Fencing of the meadows would be needed to limit livestock entry into the campground areas, although this would entail substantial investment of capital for installation and maintenance.

Income from grazing permits would be minimal due to the low carrying capacity of the forest and the low value of the forage. Based on the current US Forest Service grazing fee of $1.43 per AUM, the total gross income to the State Forest would be $36.77.

Management Objectives:

1. Due to the low value of grazing permits and the potential conflicts in the recreation areas, it is recommended that grazing not be permitted on the forest except for research purposes.

2. The existing drift fence system should be maintained to exclude cattle from adjacent private land and the US Forest Service.

3. Update the 1956 grazing study with a new survey and calculate an updated carrying capacity for livestock use. The main goals of a new forage study would be to document the recovery of the meadow system from past over-grazing and identify stands that could benefit from vegetation control.

4. Evaluate the cost of building and maintaining fences against the benefits of increased tree growth due to reduced competition in designated areas

Carbon Sequestration and Greenhouse Gas Emissions

The Sierra Nevada Ecosystem Project identified rapid anthropogenic climate change as one of five factors that are drastically affecting the long-term health of the Sierra ecosystems and that could drastically alter it (SNEP, 1996). In 2007 the State of California passed the Global Warming Solutions Act (AB 32), which set targets to reduce greenhouse gas emissions to 1990 levels by 2020 and 80 percent below 1990 levels by 2050. The California Air Resources Board was tasked with obtaining compliance with the cap through regulatory and market approaches. Planning is currently underway and definitive decisions by the Board have not yet been taken, however, it

appears that forests will play a significant role in non-regulated strategies to meet targets. This is anticipated to occur both as offsets within a cap and trade system and through voluntary measures.

Recognized strategies to mitigate GHG emissions and enhance terrestrial sequestration include reforestation, forest management and fuels treatments to avoid catastrophic losses. Mountain Home will contribute to the targets of AB32 by increasing the resiliency of the Forest to catastrophic mortality by improving the general health of stands, pre-fire implementation of a shaded fuel break and maintenance of firefighting infrastructure such as roads, signage and water sources. The long-term carbon stocks of the Forest are anticipated to increase over time. Forest products produced from Mountain Home will sequester carbon during their life cycle. Further sequestration will occur when timber is harvested, made into forest products where it is stored for an indefinite period of time, and then regenerated. Biomass fuels produced on the Forest also provide an opportunity to replace fossil fuels with an alternative energy source that is close to carbon neutral.

A detailed analysis of CAL FIRE carbon budgets as they pertain to Mountain Home will be included in the CEQA analysis associated with this management plan.

VII RESOURCE PROTECTION

Abiotic Factors

Human Activity - Human activities, including recreational use, timber harvesting, and road construction, can cause tree damage including scarring and debarking trunks, and severing or burying roots. These injuries weaken trees, making them more susceptible to insects, diseases, and windthrow.

Activity around recreational sites may effect the growth and value of older conifers through soil compaction and scarring. Campground activities prevent establishment of seedlings and reduce the number of saplings and pole-sized trees. Trunks of campground trees are often damaged by nails used for hanging clothing, lanterns, tents, etc.

Air Pollution – Ozone causes most of the air pollution damage to conifers in the forest. Ozone develops primarily from automobile emissions. Two by-products of engine combustion, nitrogen dioxide and gasoline vapors, combine with sunlight to produce ozone in the atmosphere. Prevailing wind currents move air pollution from the Central Valley into the forest. Ozone damage to conifers was monitored for a period of time at Mountain Home. However, ozone levels have been decreasing for several years and the damage is subsequently diminishing. Ozone effects needle retention. It does not usually cause the death of a tree, but predisposes it to attack from insects or disease.

While there is some disagreement about the order of tree species' sensitivity to ozone, sensitivity of species found on the forest (ranked from most to least sensitive) is thought to be: red fir, ponderosa pine, Jeffrey pine, white fir, incense cedar, sugar pine, and giant sequoia (USDA Handbook #521, 1993).

Insects and Diseases

Appendix D contains a list of the primary insects and diseases occurring on the forest.

Insect Pests - Bark beetles attack trees by boring through the bark to the cambial region to lay eggs. The construction of their egg galleries causes injury or death to the host tree. Fungi introduced by insects cause additional injury and deterioration of wood fiber. Trees under stress, generally from over-crowding and lack of available water, are the most susceptible to insect attack.

Methods for reducing beetle activity include felling and removal of infested trees, and lopping and scattering and/or removing the bark from downed wood to limit its use for beetle reproduction. Control can also be encouraged by thinning overstocked stands to help avoid initial attack by bark beetles. Bark beetles can travel long distances, and generally complete their life cycle and fly away before the attack is detected, limiting the usefulness of control efforts.

Mistletoe – True mistletoe occurs on conifer and broadleaf tree species. They are disseminated by birds, which ingest seeds then excrete them onto a host tree. This tends to concentrate tree mistletoes in the tops of trees. They are primarily found in older trees. It takes years for their presence to build up and cause damage.

Dwarf mistletoe is a parasite almost wholly dependent on the host tree for food and water. Generally, dwarf mistletoes do not kill their hosts directly, but predispose them to attack by bark

beetles or diseases. Dwarf mistletoes are host specific, and have long life cycles. The rate of spread through a stand is relatively slow.

Heart Rot – Heart rots are caused by fungi entering and destroying the heartwood. As a rule heart rots do not invade sound wood, but need an opening or disease court providing access to the heartwood. Wounds caused by fires or human activity are common points of entry. Trees with heart rot are more prone to windthrow and breakage.

Root Diseases – Armillaria root disease is usually present in stands with oaks. Armillaria has a very wide range of host species. Most conifers found in the west are at least moderately susceptible. The disease is dependent on stressed or dead oaks for the growth of root-like structures called rhizomorphs. The removal of standing oaks increases the risk of the infection moving into a stand.

Annosus root rot damages tree roots. All conifers in California are susceptible to it, but most hardwoods are not. It can move from pine to fir, but not from fir to pine. The disease can also survive in the soil in the absence of trees for as long as 50 years. Annosus is spread by spores and through root contacts. Spores can be carried by the wind and become established on freshly cut tree stumps or basal wounds. Root contact with infected roots can spread the disease to adjacent trees, moving it primarily from pine to pine or from fir to fir.

Annosus is an especially important disease on Mountain Home because it kills or weakens trees that may then pose a hazard to the public. The pines and firs will usually succumb to bark beetle attack after infection and need to be removed. Giant sequoia and incense cedar are resistant to insect attack; nevertheless, the fungus may rot most of their roots, making them more susceptible to windthrow.

White Pine Blister Rust – White pine blister rust is native to Asia and was introduced to the United States around 1900. The blister rust has been known to infect almost all species of white, five-needle pines in the world. Blister rust was discovered on sugar pine in the State Forest in 1968. At that time the blister rust was confined to relatively small infection centers. Since then, the disease has spread throughout the forest and occurs on all sugar pine sites in the area.

In 1980 a survey of blister rust was made in conjunction with the Continuous Forest Inventory measurements. That survey found that 27 percent of the sugar pine on the forest were infected with blister rust. Approximately 85 percent of the sugar pine around the State Forest Headquarters had been lost due to a combination of blister rust and bark beetle attacks. Young trees in particular have been impacted by the disease.

The State Forest implemented control measures for the disease in an effort to reduce the loss of sugar pine. From 1968 to 1978, blister rust disease centers were scouted and their boundaries were identified. Trees with cankers within 12 inches of the trunk were cut down. Almost all sugar pine less than 36 feet tall were eventually removed from the disease centers. Trees to be retained were selected based on their size, spacing, and disease resistance. These trees were pruned to a height of 18 feet.

During the early stages of control effort, it was thought that the disease could be eradicated by thorough treatment of all disease centers. By 1974, the control program had made some progress. The number of infected trees in the main disease centers had been reduced. At that time blister rust was confined mainly to the lower parts of the crown, and the remaining trees were thought to be protected from further infections by pruning. The thinning of the stand had also increased the growth of the remaining trees.

However, it soon became evident that the cankers were too difficult to detect and the problem was too extensive to remove all infections. A marked increase in blister rust infections began in 1975. Cankers were found higher in the crown, above the 18-foot pruning height. Bole cankers

were more prevalent, with increased mortality and top kill. The disease spread rapidly to other areas of the forest and onto adjacent private land. Control strategies were changed; intensive blister rust control work was confined to campgrounds and road sides. Elsewhere, all non- or lightly-infected young sugar pines and sugar pines over ten inches DBH were retained until the next commercial harvest of the stand.

In 1981, blister rust control again shifted direction, to developing resistant planting stock. A total of eight trees were identified as carrying major gene resistance (MGR). Seedlings grown from these resistant trees were planted in 12 test plots in 1983 and 1984. The hope was that the resistance could provide a temporary solution until a more permanent one was developed. These plantations seemed promising until 1996, when the virulent race of blister rust was discovered on Mountain Home. The virulent race is capable of overcoming MGR in sugar pine. These MGR plantations are slowly being eliminated by the virulent race.

Future control strategies for white pine blister rust may include planting a mix of rust resistant and susceptible sugar pines. This may slow down the progression of the disease until more "slow rusting" seedlings become available (sugar pines that is not completely "immune" to the normal rust fungus but show partial resistance to the disease, and surviving the infection for long periods of time). Mountain Home State Demonstration Forest will do any planting in consultation with researchers on white pine blister rust genetics from the USDA Forest Service, possibly using the site with its virulent strain of the fungus as a test site for sugar pine genetic resistance.

Management Objectives:

1. Minimize tree losses to insects and diseases and maintain thrifty and vigorous trees by thinning dense stands and removing high-risk trees during sanitation-salvage cuts.

2. Minimize injury to trees during logging operations. Harvest later in the summer when bark is less likely to be removed easily. Designate skid trails prior to harvesting. Adequately administer sales to minimize tree damage. Limbing and bucking should be required prior to skidding. Skinned-up trees will be evaluated by a qualified forest officer to determine if removal is required.

3. Expose slash to direct sunlight or time thinning and pruning operations for late summer to prevent build up of a breeding population of Ips.

4. Close camping areas for 10 to 15 years on a rotational basis to allow recreation area trees to grow and establish new seedlings. Further study is needed to provide a schedule.

5. Develop handout materials to educate the public on the damage caused by nails, defacing trees, and litter.

6. When artificial regeneration is utilized, plant a mixture of conifer species, thereby avoiding monocultures and reducing the threat of host-specific diseases.

7. When oaks are cut, leave a stump no more than eight inches high to allow sprouts to grow and keep the root system alive. Removing or chemically treating oak stumps is counter-productive to managing Armillaria.

8. Favor pine when planting in or near annosus disease centers. Do not plant the susceptible species, incense cedars or giant sequoia, in known or suspected disease centers in recreation areas.

9. Treat freshly-cut pine stumps with granular borax (sodium tetraborate decahydrate, also known by the product name, “Sporax”).

10. Use a two-pronged approach to blister rust control: silviculture and genetic selection. Continue to work with US Forest Service Geneticists and State Forest Pest Management Specialists on identifying slow-rusting trees and researching the rust outbreak. Use harvesting as an opportunity to remove trees infected with blister rust and improve the genetic resistance of the remaining stand. We have developed a blister rust silvicultural prescription. It allows retention of non-infected trees and trees with less than 20 percent of branches infected and with no unprunable lethal infections (defined as a canker within 24 inches of the trunk). Branches with cankers more than four inches from the trunk may be pruned off to keep the canker from reaching the trunk and girdling the tree. Pruning is practical only up to 16 feet due to the inordinate time and effort required to prune above this height.

Present hopes for finding genetic resistance lies with 26 sugar pine trees identified as potentially being ontogenetic. These trees do not carry the MGR gene but have another form of genetic resistance. Cones will be collected from these trees for a future project. The goal will be to secure funding and develop a study design for out-plantings that could assist in identifying the resistance mechanism.

Animal Damage

Animal damage occurring on the forest can normally is attributed to either gophers (*Thomamys* sp) or deer (*Ondocoillus halmonus*). Deer browsing has not been a significant problem on the forest. There appears to be a very small resident population. The few Douglas-firs occurring on the forest are the only trees deer moderately browse.
Where necessary, deer browsing could be controlled by spraying with an approved deer repellent.

Pocket gophers are not normally a forest resident. They prefer open areas where their principle foods, grasses and broad-leafed herbs, grow in abundance. Logging may increase gopher habitat by expanding meadows and grassy areas. Planted trees may be damaged or killed by gophers cutting their roots. Pocket gophers will forage near their burrow openings and burrow through snow to gnaw the bark of young trees. Fan-shaped mounds and earth cores (winter casts) left from snow tunneling are indications of pocket gopher activity. Gophers can be controlled by vegetation management or by poison baits. Removal of grasses prior to planting is usually sufficient to cause gophers to move.

Fire Protection

Fire occurrence on the forest is low. A significant fire event has not occurred in the Mountain Home area in over 100 years. However, in 2004, Mountain Home was threatened by the Deep Fire that ran up the Wishon Fork of the Tule River. In 2008, a lightning strike caused a 1 acre fire to burn below the Vantage Point Road. Most fires that have occurred originate from illegal campfires or were started by careless smokers. A five-acre fire was the largest in the last decade; it was started by a careless smoker on a hiking trail. Fire prevention, fire suppression, and appropriate law enforcement are the keys to averting significant fires on the State Forest. This responsibility falls on the State Forest Manager.

Mountain Home staff will take prompt action on fires occurring in or near Mountain Home. Upon the arrival of a Tulare Unit fire control representative, control and patrol activities pertaining to the fire will become their responsibility. State Forest staff will be available as needed.

During fire season, all permanent forest personnel are on call day and night as required for the State Work Week group. Forest personnel will be fire trained, if possible.

During summer weekends, the forest will be patrolled by the State Forest Manager or assistant. It will be their responsibility to meet the public, explain State Forest rules and regulations, and report and take appropriate action if any fires occur on the forest.

MHDSF maintains a number of strategically located water sources to be used for emergency fire fighting efforts. There are two fire fill stations located on the forest that are supplied by springs. These springs were developed to supply the Frasier Mill campground, Shake Camp campground, Pack Station and public corrals with drinking water. The Shake Camp filling station is located in the Shake camp area west of the first set of public corrals just north of the Pack Station. The second station is located at the entrance of the Frasier Mill campground on the side of the Camp Lena Road. Both filling stations are equipped with a 1½" fire hose to provide water to an engine or the State Forest pumper.

Drafting locations are found at Hedrick Pond, Balch Park, and the Wishon Fork of the Tule River at Hidden Falls campground. A small pond located at the summer headquarters should be reconstructed for fire suppression needs. The pond was located on a class II watercourse that flows beneath the headquarters driveway. It is strategically located at the facility to provide water to all of the structures in the event of a wildfire. The dam reconstruction project would result in an area measuring roughly 90 feet long by 60 feet wide and approximately 12 feet deep. These dimensions would yield approximately 1.5 acre feet when full.
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IX. APPENDIXES

Appendix A. Management Guidelines

These guidelines represent goals for management of the different resource values on the Forest. They are not enforceable standards. They cannot all be accomplished on all projects at all times. Some of the guidelines for different resource values conflict with each other. The goal is to meet the optimal combination of these guidelines on each particular project. On some projects, one or a small subset of these guidelines may be overriding, to the exclusion of all others. On other projects it may be a case of meeting as many of the guidelines as possible.

Overall Forest Management Objectives

1. Provide for recreational opportunities as the primary use of the State Forest. Work toward expansion and improvement of existing facilities and the development of new recreational opportunities in suitable areas. Maintain the system of campgrounds, picnic areas, trails, and roads in such a manner as to provide for safe and enjoyable use by the public.

2. Maintain an inventory of cultural resources and provide for their protection. Encourage research and interpretive use of these sites.

3. Harvest timber under sustained yield management on all productive areas while maintaining or enhancing recreational values. Harvest timber by the most economical methods that will protect the environmental values and maintain productivity. Ensure prompt regeneration following cutting and maintain optimal stocking throughout the life of the stand. Protect old growth giant sequoia from fire, cutting, and logging damage, and encourage reproduction.

4. This information should be made available to the general public, small forest landowners, resource professionals, timber operators, and the timber industry. Research and demonstration projects will be aimed at providing practical information for forest landowners who need to manage a host of forest resources, including but not limited to, wildlife, water, soil, sensitive plants, and timber. Due to limited staff resources, cooperative research projects will be sought with other public and private researchers who share a common interest and direction in forest management. Staff will seek opportunities to disseminate information to landowners and the public regarding Best Management Practices to maintain a healthy forest ecosystems. Continue research into forest-based carbon sequestration and forest management techniques to promote forest adaptation and resiliency to climate change.

5. Improve fire safety and forest health and optimize the use of dead and down trees, slash, bark, cull logs, and precommerical thinning for fuelwood, posts, pulpwood, and other specialty products. Utilize dead and down giant sequoia while protecting the recreational and scientific value of selected specimens. Make cone collections to satisfy the needs of the State nursery system and sell the excess to private collectors.

6. Improve and maintain watershed protection through forest practices and erosion control efforts. Develop water sources and assure safe drinking water for use at administrative and recreational facilities.

7. Prevent site degradation by using erosion controls and soil conservation practices in all management activities.

8. Enhance the existing habitat for as many wildlife species as possible. Manage cover, food, and water to sustain or increase wildlife populations. Prevent the degradation of stream and pond habitat that is suitable for fish populations.

9. Manage the forest to maintain an aesthetically pleasing forest environment for the recreational visitor. Harvest timber strategically to increase the visibility of old growth giant sequoia. Improve aesthetics in high use areas and along roads by controlling the density of leave stands, treating slash promptly, and promoting rapid regeneration.

10. Continue the fire prevention program utilizing education, enforcement, patrol, vegetation management, fuelbreaks, pre-fire planning, and suppression.

11. Continue an aggressive pest management program to improve forest health and reduce tree mortality due to insects and diseases utilizing monitoring, established control methods, and stand sanitation.

12. Continue research into forest-based carbon sequestration and forest management techniques to promote forest adaptation and resiliency to climate change.

13. Develop and maintain a fire resilient landscape within the MHDSF to protect the forest, the habitat it contains and the waters from which it drains.

14. Investigate and implement societal preferences for giant seuoia management and conservation.

15. Research and demonstration on silvicultural methods to establish and promote sugar pine and giant sequoia.

16. Maintain as wide a range of seral stages and forest structure types as possible, from regeneration to old growth, open and closed stands, in order to maintain options for future management and research.

17. Foster the development of giant sequoia stands, both young growth and old growth, to a point that is reflective of current natural forest conditions in this region. Establishing a more natural species mix will in many cases require a dedicated effort to decreasing the white fir component of stands and cultivating giant sequoia and pine species. Desired forest structure will typically be that of low density, fire resistant stands.

Recreation Management

1. The State Forest is best suited for a rustic type of recreational facility that is less likely to impact the other management goals of the forest. This would eliminate consideration of capital improvements such as paved campground roads, flush toilets, hookups for electricity and sewer, and commercial concessionaires, other than the pack station. Campgrounds shall be designed for tent campers and small to moderate sized recreational vehicles. The existing design of campground facilities has proven to be vandal resistant, attractive, and economical. These standard designs should continue to be used with experimental use of any other designs that show promise of being superior.

2. Recreation areas will not be located in old - growth giant sequoia groves. These areas are highly hazardous to campers due to the chance of windthrow and loss of limbs from the old growth trees. Also, site disturbance from campgrounds may have adverse effects on the old growth trees.

3. Maintenance of existing facilities is the top priority. Expansion should occur only if projected operating funds and manpower are adequate to maintain the expanded system.

4. Emphasis will be placed on expansion of existing facilities and concentration of use into moderate sized campgrounds. This will reduce development and maintenance costs. Numerous small facilities scattered over a large area should be discouraged.

5. Major winter sports development is not planned. Winter sports use, such as cross-country skiing and snowmobiling, will continue to be limited by controlling winter access to roads and parking areas.

6. Timber management activities must be coordinated with recreation planning. Proposed recreation sites should be harvested in such a way as to remove all current and projected hazardous trees while leaving the young growth stand and understory intact. Small sales will be planned to remove hazardous trees in existing campgrounds as needed. Roads and landings should be laid out with possible recreational use in mind.

7. ATV use on public roads is increasing. Some emphasis should be placed on designing a trail system that will allow for ATV use without the need for them to ride on the public access roads. Currently, ATV travel is restricted to the secondary roads found at Mountain Home that are not secured with locked gates. These roads typically are not surfaced and do not access any campgrounds or day use areas. A five to six mile ATV trail is being evaluated. Trail location should focus on using existing secondary roads and skid trails that will allow for minimal disturbance to vegetation and other sensitive areas. Trails should be located away from giant sequoia, springs, watercourses, meadows and archaeological features to the greatest extent possible. Furthermore, off-highway recreational vehicle trails should be placed as far away from equestrian and hiking trails as possible. Erosion control structures to prevent soil displacement shall be installed to those standards set forth in the Forest Practice for tractor trails.

Research and Demonstration

1. Maintain the available housing. This will be an ongoing function of Mountain Home staff that will include routine maintenance, materials for minor building repairs, and necessary supplies including propane, gasoline, and cleaning supplies.

2. Collect, organize, and store data on tree and plant inventories; wildlife and fish inventories; and soil, geologic, meteorological, and watershed data so that it is available to researchers.

3. Projects dealing with impacts to sensitive species and their habitat from various harvesting methods should be emphasized.

4. Demonstrate effects of various methods of managing younger forest stands.
Because this is a general trend, work concentrated on young growth management should be considered. Studies concerning optimum growing stock levels, young growth harvesting equipment, reduction of stand damage during harvest, and comparisons of even-aged and uneven-aged management are possible examples.

5. Experimental work in all aspects of regeneration is still needed. Also of prime importance in the Sierra Nevada are solutions to both natural and artificial regeneration problems.

6. Investigate effect of the California Forest Practice Act on timber harvesting. Investigate effects in terms of costs, environmental impacts, mitigations, and productivity.

7. Develop additional interpretive trails near existing campgrounds and other heavily used areas. Possible locations include the Loop Trail at Shake Camp, Frasier Mill, and the River Trail from Hidden Falls to Moses Gulch. Descriptive handouts placed at these trailheads would increase the education and enjoyment of the public while explaining State forest management.

8. Tours of different areas of the forest could be organized and led by staff. Topics and locations could include historical areas, recent or active timber sales, experimental plots, etc. The general public could be informed of tour dates and times through posting in campgrounds and press releases to local newspapers. Groups could be encouraged to request guided tours on specific topics. Development of an environmental program for various school groups should also be initiated.

9. Research results from Mountain Home are provided to customers. Each project will be evaluated as to the most appropriate outlet for dissemination. The CAL FIRE publications will be distributed to appropriate libraries in the State. Relevant abstract publishers will be asked to include references to these publications. Search engines will be contacted with the link to the web site and it will be advertised in applicable publications.

10. The public should have access to information about the State Forest mission as well as past and current projects at Mountain Home. This will be facilitated by the California Demonstration State Forests web site, which will be housed at the CAL FIRE web site. Past and current project reports and publications will be available, as will data sets. This will encourage building on past projects and using multidisciplinary approaches when researchers are developing proposals.

Forest Management

1. Standing old-growth giant sequoias will not be harvested and shall be protected from damage during all management activities. Old growth trees will be protected during harvest activities. Care must also be taken to avoid cutting or removal of the shallow root system when constructing roads, skid trails, and landings. Timber falling must be done carefully so that damage to the tops or trunks of adjacent trees does not occur.

2. Young growth giant sequoias shall be managed primarily as replacements for old growth trees lost to natural death or historical logging (prior to the establishment of the State Forest). Young-growth trees will be commercially thinned where density is too great for all trees to grow into old growth replacements. Estimates of the density and distribution of old-growth giant sequoia trees prior to 1860 shall be used to determine the optimal stand structure.

3. It is recognized that reproduction of giant sequoia requires disturbance in the form of fire or timber harvesting. Harvesting will remain the primary means used to encourage giant sequoia reproduction. Prescribed fire will be used in certain situations to reduce fuel loading, clear the ground, and provide heat to open giant sequoia cones.

4. No timber harvesting will occur in the Silver Creek Grove.

5. Giant sequoia planted outside of the natural groves will be managed as a timber resource. No attempt will be made to expand the grove area by allowing these planted giant sequoias to become old growth.

6. Selective harvesting of white fir, pine, and incense cedar within the groves will be managed to improve vistas of individual old growth giant sequoia and protect them from wild fire. This harvesting can be performed effectively to enhance the aesthetic appearance of the forest for recreational visitors.

7. A harvest level of 2.4 to 3 million board feet annually will be implemented. This harvest level is less than the indicated net growth of the forest on a sustainable basis. It will permit harvests in perpetuity without depleting the productivity of the soil, the forest stands or other public trust resources.

8. Continue to use uneven-aged management as the primary silviculture system in

future harvests on the State Forest. Artificially regenerate openings caused by the removal of trees in group selection cuts. Rely on natural regeneration in other areas.

9. The cutting cycle for operational management will range from 10 to 30 years.

Watershed and Fisheries

1) Adequate watercourse protection shall be incorporated in timber sales adjacent to fisheries. Overstory and understory vegetation shall be retained in sufficient amounts within watercourse protection zones so that water temperatures will not increase.

2) Deposition of any substances in streams or ponds that will degrade fish habitat shall be avoided.

3) Road crossings of fish bearing streams must be designed to allow fish passage.

4) Allow for the natural recruitment of large woody debris to the stream channel to improve or maintain in-stream habitat quality and stream ecosystem function.

5) Minimize the number of temporary watercourse crossings.

6) Dredge Hedrick and Upper Balch Pond as needed to improve water depth, clarity, and oxygen content.

Wildlife

1. Retention of oaks that produce quality mast.

2. Grass will be planted on landings and skid trails planned for re-use to provide an additional food source for wildlife.

3. Roads not needed for management access will be closed in certain areas to reduce hunting pressure.

4. Retain brushy sprouts beneath established trees.

5. Enlarge meadows by cutting encroaching trees and other vegetation.

6. Retain snags and down wood material as allowed by the Forest Practice Rules. Attempt to maintain a minimum of three snags and three dead and down logs per acre in recently cut areas.

7. Maintain natural springs and maintain ponds in a healthy manner. Plan for additional pond construction with little, if any human use.

8. Protect and restore riparian zones

9. Design forest management activities based on landscape perspectives. Components to consider will include horizontal and vertical forest structure, vegetation density, edge effect, corridor size, and biological diversity.

Prescribed Burning

1. Utilize prescribed fire to reduce fuel loads and provide a seed bed and heat to open giant sequoia cones.

2. Explore the use of broadcast burning for slash treatment and maintenance of shaded fuel breaks.

Archaeological Resources

1. All known sites on the forest shall be protected during all management activities, especially road construction and logging. Procedures for protection of cultural resources will be followed; see Appendix for further discussion. Additional protective measures for specific sites may also be prescribed.

2. The cultural resource sites should also be managed for their educational information. Studies including surface collections, test excavations, site mapping and other projects should be encouraged when appropriate. The activities must be approved in advance by the CAL FIRE Archaeologist and the Forest Manager. Through archaeological study we will develop the interpretive value of these resources for the benefit of our forest visitors.

3. In general, there shall be a policy of allowing no collection of archeological artifacts and materials. When appropriate, commonly found specimens such as flakes, manos, pestles, pot shards, projectile points, shell objects, or bone tools may be collected and forwarded to a CAL FIRE Archaeologist for recording and analysis.

4. A public interpretive display should be developed and located at the Visitor Center or the State Forest headquarters. A pamphlet outlining the forest policy concerning collections and site protection should accompany the display. Artifacts recovered during previous surveys will eventually be curated on the forest, and can be used for public display and enjoyment. We want to encourage the public to enjoy, visit, and learn from the forest sites, but we also want to emphasize the rules that protect them. An artifact display could tend to encourage illegal digging and collecting if the policies were not also displayed.

5. Interpretive trails and signs at archaeological and historic sites should be developed and maintained. The location and wording used for the signs should be selected in consultation with the CAL FIRE Archaeologist in order to minimize potential losses from collecting, and to use accurate descriptive language.

Range Resources

1. Due to the low value of grazing permits and the potential conflicts in the recreation areas, it is recommended that grazing not be permitted on the forest except for research purposes.

2. The existing drift fence system should be maintained to exclude cattle from adjacent private land and the US Forest Service.

3. Update the 1956 grazing study with a new survey and calculate an updated carrying capacity for livestock use. The main goals of a new forage study would be to document the recovery of the meadow system from past over-grazing and identify stands that could benefit from vegetation control.

4. Evaluate the cost of building and maintaining fences against the benefits of increased tree growth due to reduced competition in designated areas.

Resource Protection

1. Minimize tree losses to insects and diseases and maintain thrifty and vigorous trees by thinning dense stands and removing high-risk trees during sanitation-salvage cuts.

2. Minimize injury to trees during logging operations. Harvest later in the summer when bark is less likely to be removed easily. Designate skid trails prior to harvesting. Adequately administer sales to minimize tree damage. Limbing and bucking should be required prior to skidding. Skinned-up trees will be evaluated by a qualified forest officer to determine if removal is required.

3. Expose slash to direct sunlight or time thinning and pruning operations for late summer to prevent build up of a breeding population of Ips.

4. Close camping areas for 10 to 15 years on a rotational basis to allow recreation area trees to grow and establish new seedlings. Further study is needed to provide a schedule.

5. Develop handout materials to educate the public on the damage caused by nails, defacing trees, and litter.

6. When artificial regeneration is utilized, plant a mixture of conifer species, thereby avoiding monocultures and reducing the threat of host-specific diseases.

7. When oaks are cut, leave a stump no more than eight inches high to allow sprouts to grow and keep the root system alive. Removing or chemically treating oak stumps is counter-productive to managing Armillaria.

8. Favor pine when planting in or near annosus disease centers. Do not plant the susceptible species, incense cedars or giant sequoia, in known or suspected disease centers in recreation areas.

9. Treat freshly-cut pine stumps with granular borax (sodium tetraborate decahydrate, also known by the product name, “Sporax”).

10. Use a two-pronged approach to blister rust control: silviculture and genetic selection. Continue to work with US Forest Service Geneticists and State Forest Pest Management Specialists on identifying slow-rusting trees and researching the rust outbreak. Use harvesting as an opportunity to remove trees infected with blister rust and improve the genetic resistance of the remaining stand. We have developed a blister rust silvicultural prescription. It allows retention of non-infected trees and trees with less than 20 percent of branches infected and with no unprunable lethal infections (defined as a canker within 24 inches of the trunk). Branches with cankers more than four inches from the trunk may be pruned off to keep the canker from reaching the trunk and girdling the tree. Pruning is practical only up to 16 feet due to the inordinate time and effort required to prune above this height.

Appendix B. Historical Research and Demonstration Projects

The following is a summary of research and demonstration projects completed on Mountain Home from 1952 to the present:

Western Speleological Survey Special Report #1: Preliminary Assessment of the Haughton's Cave, Mountain Home State Park Tulare county, California – Arthur Lange, 1952

Sierra Redwood Christmas Trees from Natural Stands – unpublished report, 1954

Growth Plots on Mountain Home State Forest – California Forestry Note #1, 1960

Timber Stand Improvement by Poisoning Black Oak on Mountain Home State Forest - California Forestry Note #2, 1960

Tree Planting and Seeding on Mountain Home State Forest - California Forestry Note #18, 1963

Artificial Protection of First-Year Natural Seedlings on the Mountain Home State Forest in 1963 - California Forestry Note #22, 1964

Growth of Sierra Redwood and White Fir Trees Before and After Release as a Result of Harvesting Nearby Sawlog Trees – unpublished reports, 1964 and 1969

Quantitative Study of Recreation Use in the Mountain Home Area in 1964 – unpublished report, 1965

Chemical Control of Vegetation – unpublished report, 1967

Artificial Protection of Natural First-Year White Fir Increases Survival - California Forestry Note #32, 1967

Sierra Redwood Reproduction on the Mountain Home, a Preliminary Survey - unpublished report, 1967

Mulching Planted Trees – unpublished report, 1972

Growth of Young Sierra Redwood Stands on Mountain Home State Forest - California Forestry Note #72, 1978

Measuring the Adam Tree, Largest Sierra Redwood on the Mountain Home State Forest - California Forestry Note #73, 1979.

Effects of Fertilizer Starter Pellets on Growth and Mortality of Planted Seedlings on Mountain Home Demonstration State Forest - California Forestry Note #80, 1982

Performance of 15 and 13 Year Old Hybrid Pines at Two Sites on Mountain Home Demonstration State Forest - California Forestry Note #81, 1982

Control of Western Bracken Fern with Asulam Herbicide on Mountain Home Demonstration State Forest - California Forestry Note #85, 1983

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Appendix C. Potential Wildlife Species & Associated Habitats at Mountain Home

Common Name	Species Name	Status	Habitat Types and Range	Species or Suitable Habitat Present
MAMMALS				
California wolverine	*Gulo gulo*	ST, FP	Generalist; remote, high elevation habitats; forest, meadow, rocky.	Historic occurrences nearby, suitable habitat present
Pacific fisher	*Martes pennanti*	FC	Mature forested habitats with hardwoods, snags, and LWD.	Known to occur, suitable habitat present
American (pine) marten	*Martes iparian sierra*	Native fur-bearer	Mature forested habitats with snags, rock outcrops, and LWD.	Known to occur, suitable habitat present
Southwestern river otter	*Lontra canadensis sonora*	SSC	Perennial streams with well-developed riparian and aquatic components (forage/denning)	Marginal habitat present
Sierra Nevada red fox	*Vulpes vulpes necator*	ST	Generalist; remote, high elevation habitats; forest, meadow, rocky.	Historic occurrences nearby, suitable habitat present
Mountain lion	*Felis concolor*	Protected	Generalist; remote, high elevation habitats; forest, meadow, rocky	Known to occur, suitable habitat present
Bobcat	*Felis rufus*	SSC	Boreal zone riparian, deciduous thickets; often near meadows	Known to occur, suitable habitat present
Black bear	*Ursus americanus*	Harvest	Mid-elevation shrubby/ forested habitats with rocky and iparian areas	Known to occur, suitable habitat present
Ring-tailed cat	*Bassariscus astutus*	FP	Dense forest & shrubby riparian habitats with friable soils; dens in burrows	Known to occur, suitable habitat present
Sierra Nevada snowshoe hare	*Lepus americanus tahoensis*	SSC	Generalist; caves and thickets used for denning	Known to occur, suitable habitat present
Townsend's big-eared bat	*Corynorhinus townsendii*	SSC	Mesic habitats; roosts/dens in mines, caves, or vacant buildings, maternity roosts sensitive	Known to occur, suitable habitat present
Spotted bat	*Euderma maculatum*	SSC	Deserts to forests; likely roosts in rock crevices, maternity roosts sensitive	Known to occur, suitable habitat present
Pallid bat	*Antrozous pallidus*	SSC	Low to mid-elevation riparian habitats; roosts in trees, bridges, buildings; maternity roosts senstive	Known to occur, suitable habitat present
Red Bat	*Lasiurus borealis*	SSC	Mature riparian hardwood forests; cottonwood; maternity roosts senstive	Known to occur, suitable habitat present
Long-legged myotis	*Myotis volans*	SSC 1998 proposed	Mixed conifer & giant sequoia forest habitats; tree & rock crevice roosts	Known to occur, suitable habitat present
Fringed bat	*Myotis thysanodes*	SSC 1998 proposed	Mixed conifer & giant sequoia forest habitats	Known to occur, suitable habitat present

Silver-haired bat	*Lasionycteris noctivagans*	1998 WL proposed	Mixed conifer habitats w/black oak component; roosts in crevices and snags	Known to occur, suitable habitat present
Hoary bat	*Lasiurus cinereus*	1998 WL proposed	Conifer and deciduous hardwood habitats; generally roosts in foliage	Known to occur, suitable habitat present
Long-eared myotis	*Myotis evotis*	1998 WL proposed	Mixed conifer habitats w/black oak component; roosts under bark, hollow trees, rock crevices & soil fissures.	Known to occur, suitable habitat present
Badger	*Taxidea taxus*	1998 WL proposed	Open areas and forest edges with porous soils for dens	Known to occur nearby, suitable habitat present
Black-tailed deer (migratory)	*Odocoileus hemionus columbianus*	Harvest	Generalist; Beds down in dense forest thickets, hollows, and retention areas	Known to occur, suitable habitat present
BIRDS				
California condor	*Gymnogyps californianus*	FE, SE	Rocky, shrub or mixed conifer habitats, cliff nesting sites & tall open-branched trees/snags for roosting	No suitable nesting habitat present
Great gray owl (nesting)	*Strix nebulosa*	SE	Forests near meadows; nests in broken-topped snags/trees.	Suitable habitat present
Golden eagle (nesting/wintering)	*Aquila chrysaetos*	BOF, SSC	Nests in large trees or cliffs near expansive open habitats.	Known to occur, suitable habitat present
Northern goshawk (nesting)	*Accipiter gentilis*	BOF, SSC	Nests in mature mixed conifer stands with an open understory.	Known to occur, suitable habitat present
Willow flycatcher (nesting)	*Empidonax traillii*	SE	Willow/alder thickets in wet meadows and along watercourses.	No suitable habitat present
Bank swallow		ST	Nests in sandy banks along streams	No suitable habitat present
Cooper's hawk (nesting)	*Accipiter cooperii*	WL	Nests in dense conifer stands, mixed forests, and riparian areas.	Known to occur, suitable habitat present
Sharp-shinned hawk (nesting)	*Accipiter striatus*	WL	Early to mid-seral forest and riparian zones.	Known to occur, suitable habitat present
American peregrine falcon (nesting)	*Falco peregrinum anatum*	FP, FD	Nests on cliffs and high ledges near open areas.	No suitable nesting habitat present
Flammulated owl (nesting)	*Otus flammeolus*	WL	Forests with snags and openings; nests in cavity in live or dead trees.	Known to occur, suitable habitat present
California spotted owl (nesting)	*Strix occidentalis occidentalis*	SSC	Mature conifer forests; nests in abandoned cavity/platform in trees.	Known to occur, suitable habitat present
Long-eared owl	*Asio otus*	SSC	Riparian areas and dense live oak stands near meadow edges.	Suitable habitat present
Pileated woodpecker	*Dryocopus pileatus*	WL	Forested habitats with numerous large snags, logs, and stumps.	Known to occur, suitable habitat present

AMPHIBIANS				
California red-legged frog	*Rana draytonii*	FT, SSC	Ponds, marshes, and streams.	Extirpated from Tulare County
Sierra Madre yellow-legged frog	*Rana muscosa*	SSC	Mountain streams, lakes, and ponds above 5900' elevation.	Suitable habitat present
Foothill yellow-legged frog	*Rana boylii*	SSC	Streams and rivers, sea level to 5,800 feet.	Suitable habitat present
FISH				
Little Kern golden trout; critical habitat	*Oncorhynchus aguabonita whitei*	FT, FX	Perennial stream tributaries to the Little Kern River	No suitable habitat present
California (Volcano Creek) golden trout	*Oncorhynchus mykiss aguabonita*	SSC	Native to high elevation tributaries of the Kern River – also high elevation lakes of the Sierra Nevada Mts.	No suitable habitat present

FT = Federally Threatened; SE = State Endangered; ST = State Threatened; FC = Candidate for Federal listing as Threatened or Endangered; BOF = Board of Forestry Sensitive, Title 14 CCR 898.2(d); FP = Fully Protected (Title 14 CCR 3511or 4700; SSC = California Species of Special Concern. Federal listing refers to Central Valley ESU: Sacramento River and tributaries.

Appendix D. Important Insect Pest Species at Mountain Home

FAMILY	GENERIC NAME	COMMON NAME
Scolytidae	*Dendroctonus brevicomis*	Western pine beetle
	D. ponderosae	Mountain pine beetle
	D. valens	Red turpentine beetle
	Scolytus ventralis	Fir engraver beetle
	Ips spp	Pine engraver beetle
Buprestidae	*Melanophila californicae*	California flathead borer
	M. Drummondi	Fir flathead borer

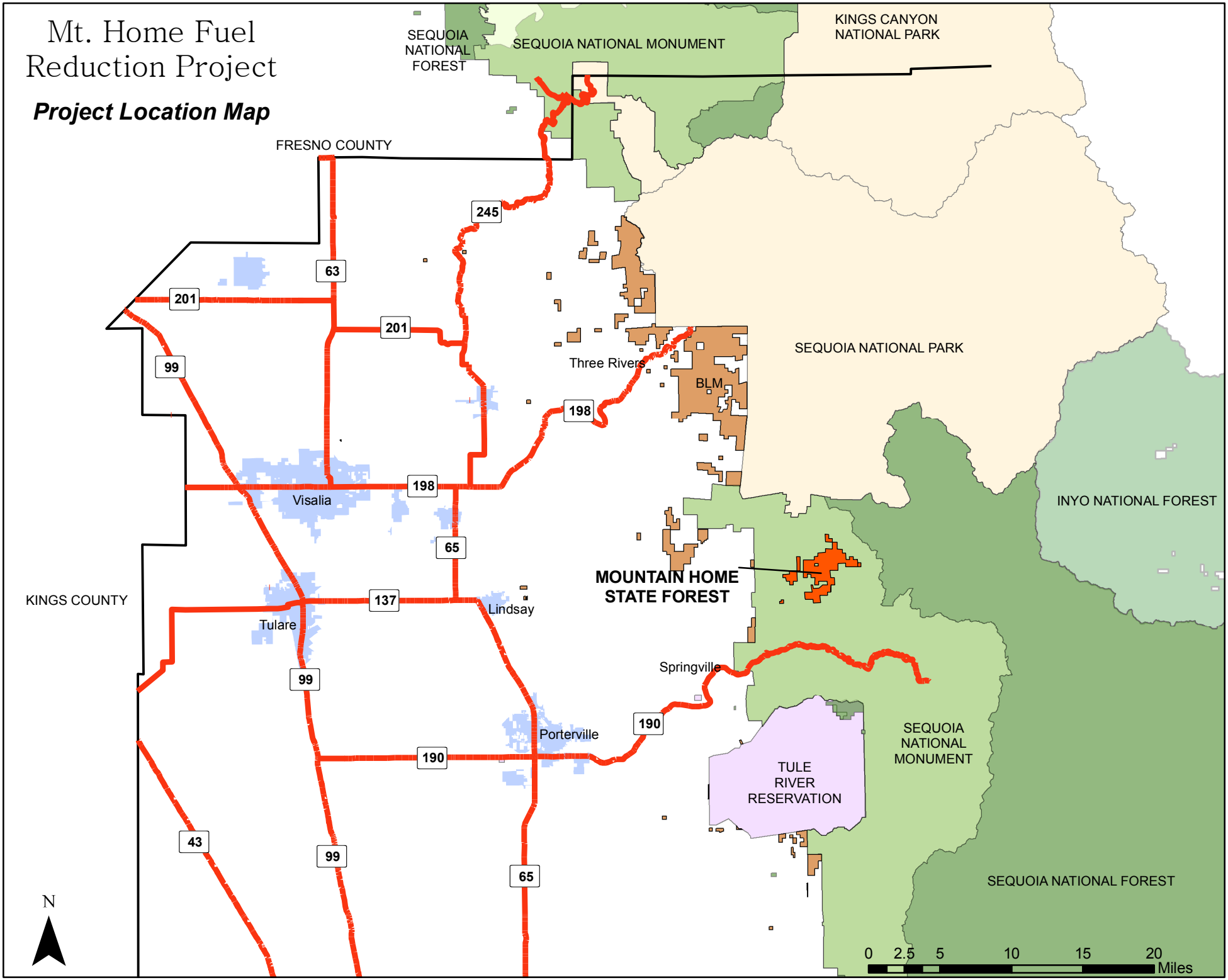
Biotic Diseases:

MISTLETOES

FAMILY	GENERIC NAME	COMMON NAME
Loranthaceae	*Arceuthobium abietinum f. concoloris*	White fir dwarf mistletoe
	A. californicum	Sugar pine dwarf mistletoe
	A. campylopodum	Western dwarf mistletoe
	Phoradendron juniperium ssp. Libocedri	Incense cedar mistletoe
	P. vilosum	Oak mistletoe

FUNGI

FAMILY	GENERIC NAME	COMMON NAME
Basidiomycetes coleosporiaceae	*Cronartium ribicola*	White pine blister rust
	C. ribicola	Blister rust
Polyporaceae	*Echinodontium tinctorum*	Indian paint fungus
	Phellinus pini	Red ring rot
	Fomes officinalis	Brown trunk rot
	Heterobasidium annosus	Annosus root disease
	Polyporos sulphureus	Brown cubical rot
	P. schweinitzii	Velvet top root rot
	P. amarus	Pocket dry rot


Mt. Home Fuel Reduction Project
Project Location Map
SEQUOIA NATIONAL FOREST
SEQUOIA NATIONAL MONUMENT
KINGS CANYON NATIONAL PARK
FRESNO COUNTY
245
63
201
201
99
Three Rivers
BLM
SEQUOIA NATIONAL PARK
198
198
Visalia
INYO NATIONAL FOREST
65
MOUNTAIN HOME STATE FOREST
KINGS COUNTY
137
Lindsay
Tulare
Springville
99
190
Porterville
TULE RIVER RESERVATION
SEQUOIA NATIONAL MONUMENT
190
43
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SEQUOIA NATIONAL FOREST
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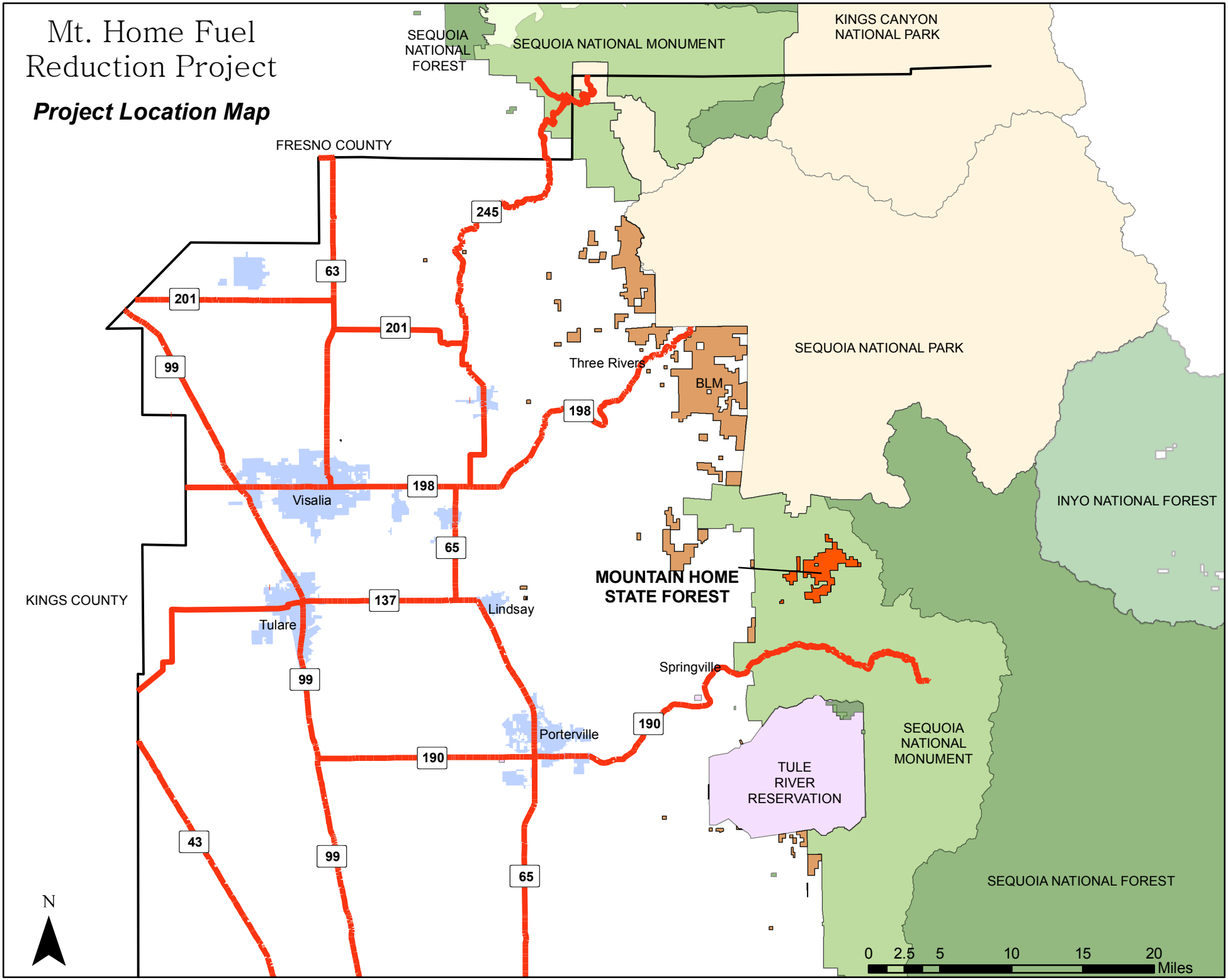
Miles


Mt. Home Fuel Reduction Project
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TULE RIVER RESERVATION
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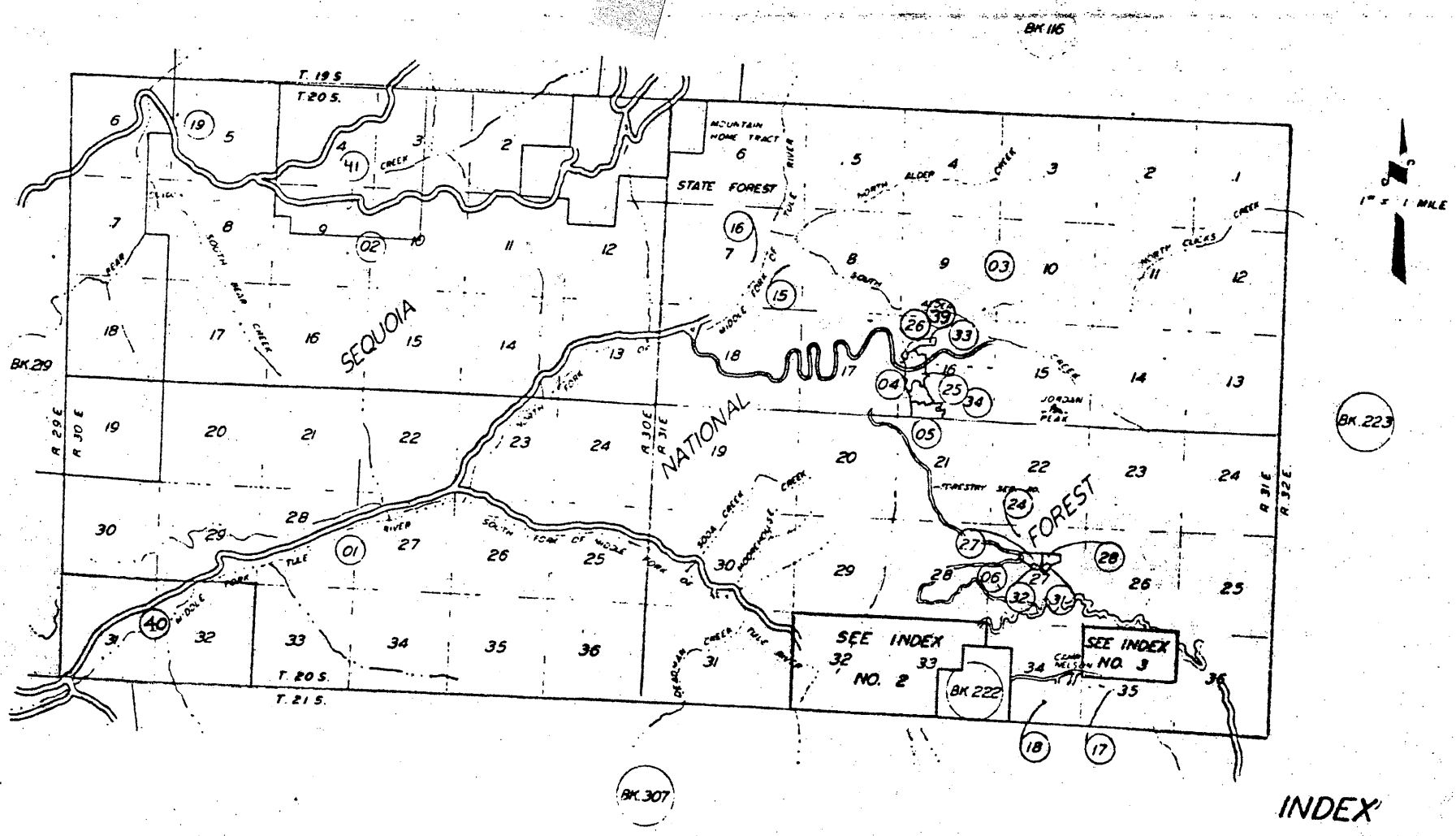
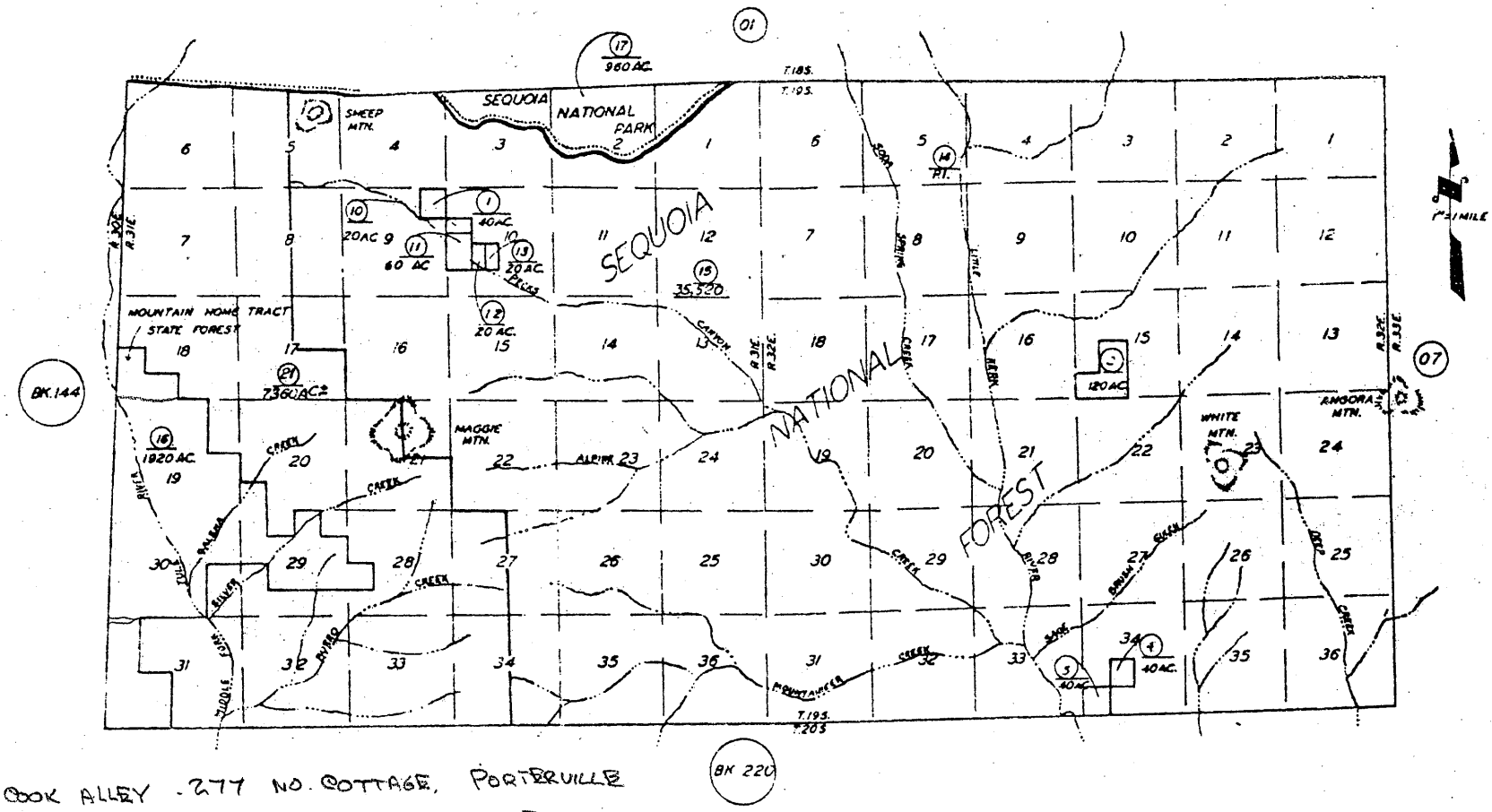


INDEX
BOOK 220
ASSESSOR'S MAPS
COUNTY OF TULARE

T.19S., RNG'S 31 & 32 EAST, M.D.B.&M.

TAX CODE AREA
136-005
136-006

116-08



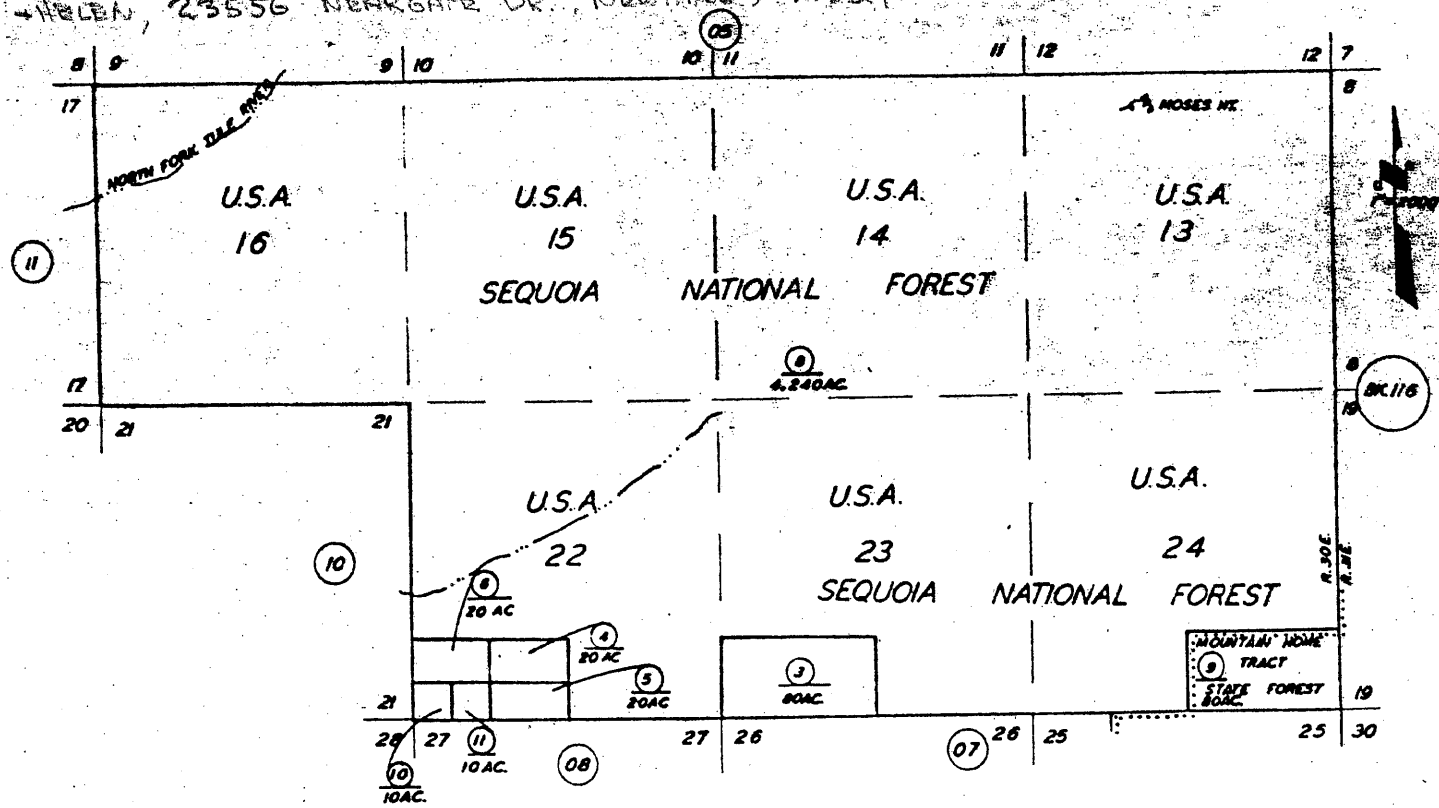
116-08-1 - RUTH COOK ALLEY - 277 NO. COTTAGE, PORTERVILLE
116-08-10 - GERVASE NEAL COOK - SAME AS ABOVE
116-08-11 - RUTH COOK ALLEY - SALE
116-08-12 - LARRY GILL - P.O. Box 509 PORTERVILLE
116-08-13 - LOREN McDONALD - 464 N. PLANO, PORTERVILLE

ASSESSOR'S MAPS BK. 116, PG. 08
COUNTY OF TULARE, CALIF.

NOTE - ASSESSOR'S BLOCK NUMBERS SHOWN IN ELLIPSES
ASSESSOR'S PARCEL NUMBERS SHOWN IN CIRCLES

136-006

144-006-3 - STANFORD, LOUISEN + HELEN, 23556 NEARGATE DR., NORWALK, 91321



ASSESSOR'S MAPS BK. 144, PG. 06.

COUNTY OF TULARE, CALIF.

NOTE — ASSESSOR'S BLOCK NUMBERS SHOWN IN ELLIPSES
ASSESSOR'S PARCEL NUMBERS SHOWN IN CIRCLES

N½ T.20S., R.31E., M.D.B. & M.

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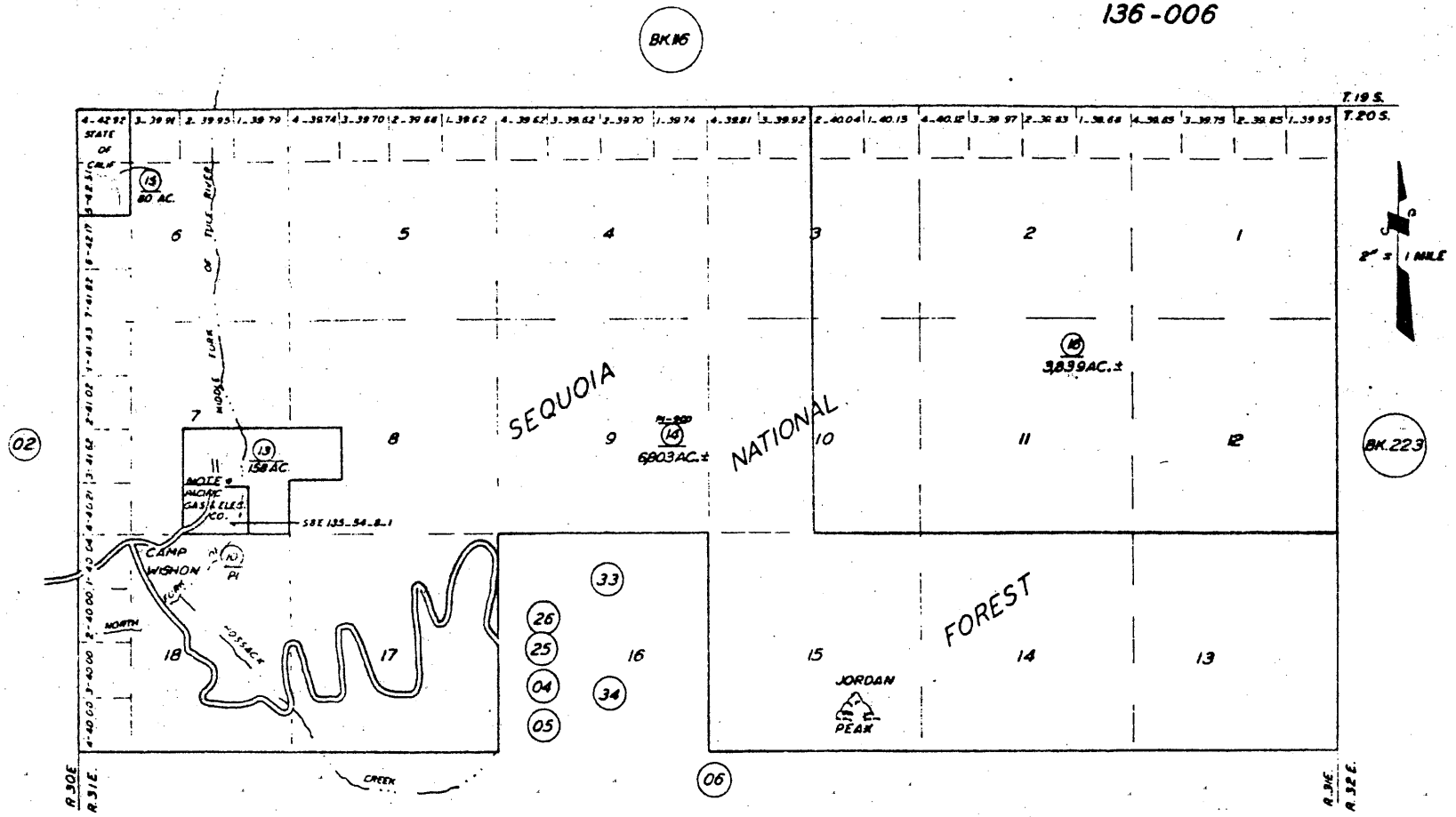
136-006



* NOTE: LEASE LAND IMPROVEMENTS SHOWN ON PAGES 15 AND 16.

ASSESSOR'S MAPS BK. 220, PG. 03

COUNTY OF TULARE, CALIF.

NOTE — ASSESSOR'S BLOCK NUMBERS SHOWN IN ELLIPSES

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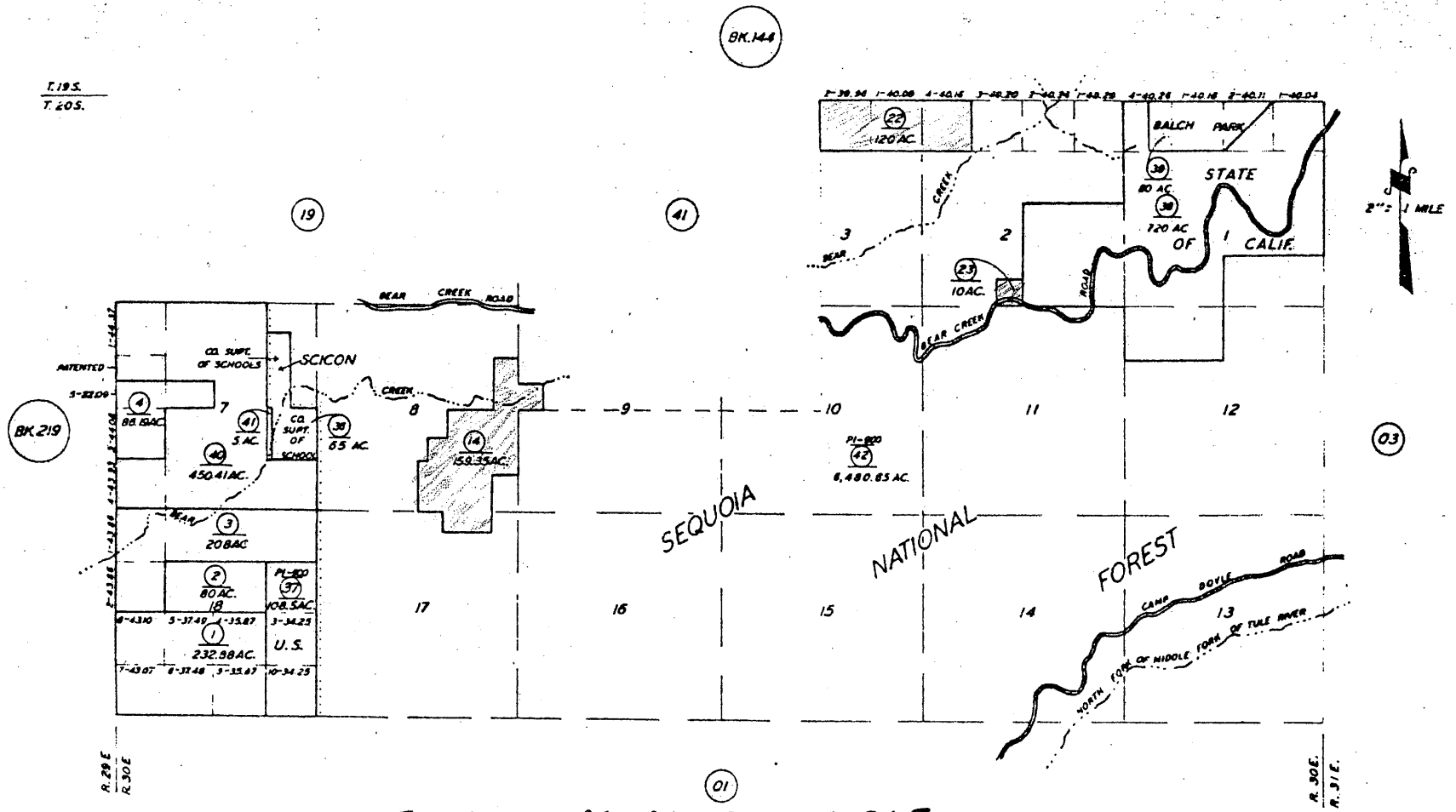
136-006



220 02 - 22 - MALCOLM HARRIS - RT 2 BOX 300 - SPRINGVILLE, CA. 93265

220 02 - 23 - RALPH & ISABELLE NICHOLAS 861 W. MULBERRY PORTERVILLE (LK ST. Nichols 784-5116)

220-02-14 - ADA HARRIS, ~~R.T. 1 Box 1170 F~~ 27613 AVE 196, STRATHMORE 93267

ASSESSOR'S MAPS BK. 220, PG. 02
COUNTY OF TULARE, CALIF.

NOTE - ASSESSOR'S BLOCK NUMBERS SHOWN IN ELLIPSES
ASSESSOR'S PARCEL NUMBERS SHOWN IN CIRCLES

POR. SEC. 19 & SEC. 20 & 21, T. 19 S., R. 30 E., M.D.B. & M.

ALSO, POR. SEC. 24, T. 19 S., R. 29 E., M.D.B. & M.

136-006

14-100-12 - BRECKENRIDGE, MADELINE, 2709 27TH. ST. BAKERSFIELD

1-100-20 - CARROLL, HAZEL E. 40851 AVE 112, PIXLEY, 93256

1-100-21 - ADAMS, PAUL, P.O. BOX 455, PIXLEY, 93256

.-100-38 - EDWARDS, SHIRLEY, 320 VALLEJO DR APT 230 MILLBRAE 94030

1-100-39 - LINDLEY, JAMES, 1001 ULPINA WAY, MARTINEZ 94553

1-100-27 - MARTIN, WILLIAM, P.O. BOX 255 PIXLEY, 93256

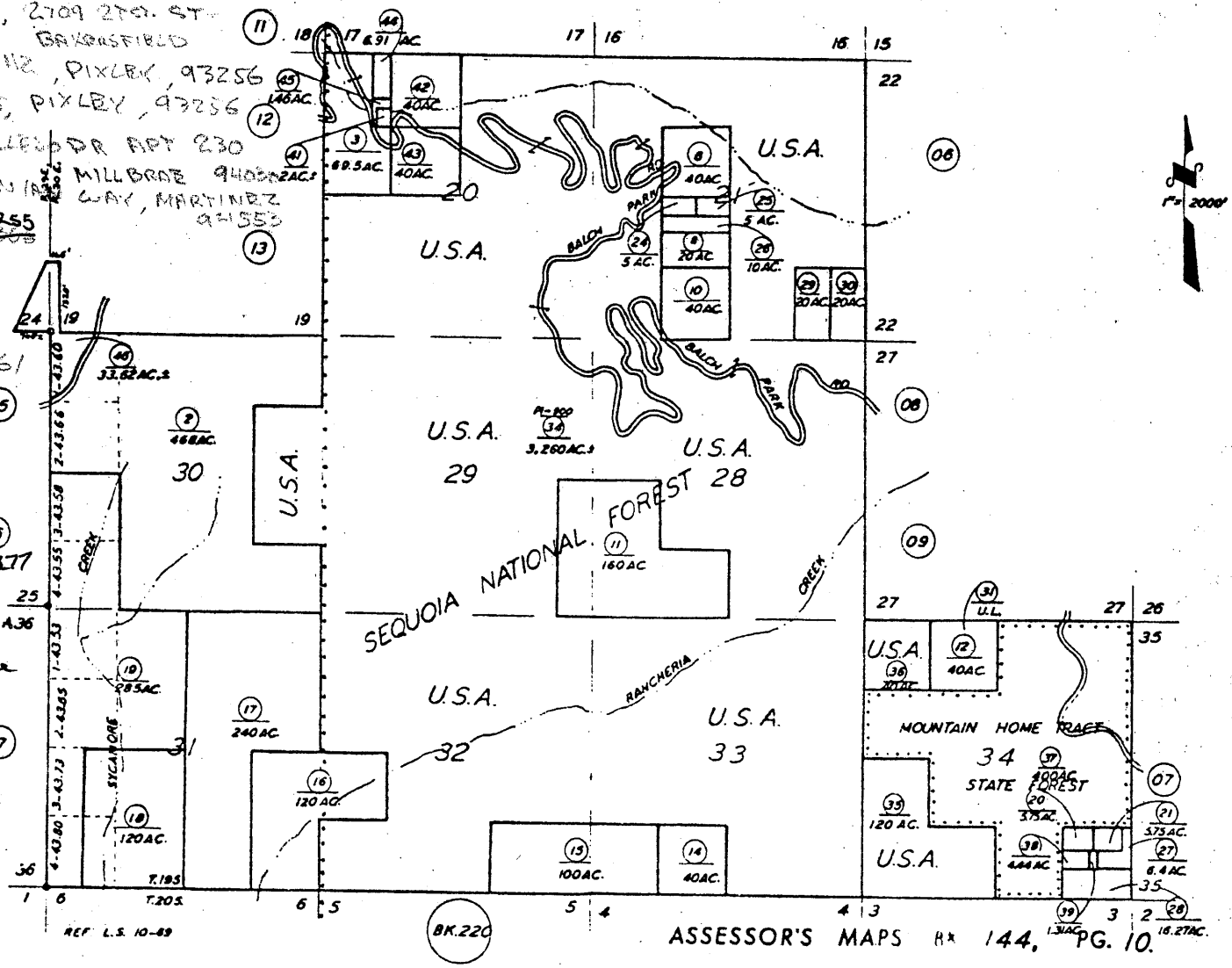
1-100-28 - BROWN, ORAL, STAR RT. BOX 813, TEHACHAPI, 93561

1-100-38 French, David Jr 3530 Mckormicle Dr, Visalia 93277

-38 French, David Jr 3530 McKORMICK Dr, VISALIA 36

-28 Borror, Bruce Rt 2 Box 300, Springville

-12 Bracchi, George 1927 20th St Bakersfield 93301



ASSESSOR'S MAPS BK 144, PG. 10.

COUNTY OF [illegible] CALIF.

NOTE — ASSESSOR'S BLOCK NUMBERS SHOWN IN ELLIPSES
ASSESSOR'S PARCEL NUMBERS SHOWN IN CIRCLES

SEE PARCEL MAP

144-01-35

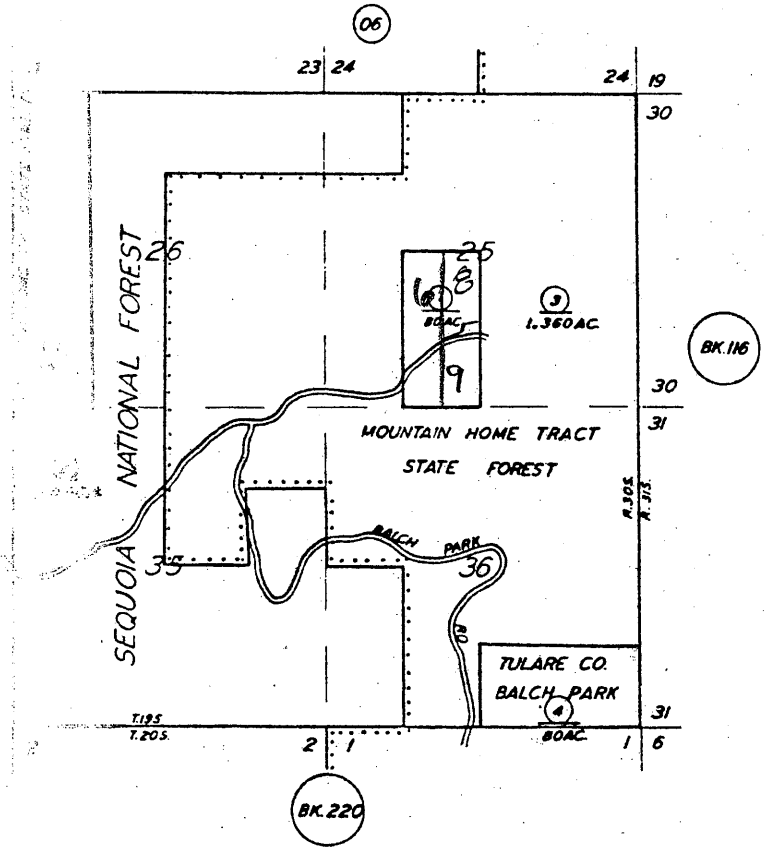
-27

144-070-01 - EDWINA GILL, 25719 AVE 13, MADERA, 93637

COA- Tulare Co. of
County Civic Center
Visalia, CA 93291

36, T.19S., R.30E., M.D.B. & M.

TAX CODE AREA 144-07
136-006



Mt. Home Fuel Reduction Project

Topographic Map

Map Features

- Treatment Area
- MHDSF Boundary
- Road

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CAL FIRE
D4104
4x4

DEPARTMENT OF FORESTRY AND FIRE PROTECTION
P.O. Box 517
Springville, CA 93265
(559) 539-2855
Website: www.fire.ca.gov

December 9, 2011

Tulare County Resource Conservation District
Attn: David Witt

Re: Sierra Nevada Conservancy Grant

Dear Mr. Witt:

As the Forest Manager of Mountain Home Demonstration State Forest, I agree to allow the Tulare County Resource Conservation District (RCD)to apply for Fuel Load Reduction Grant through the Sierra Nevada Conservancy. Mountain Home Demonstration State Forest (MHDSF) will allow for the preparation of the application with the understanding that MHDSF shall have no financial responsibility to reimburse the RCD for said application.

Should MHDSF be awarded a grant, I agree to put forth at least $20,000.00 worth of staff time for designating work boundaries, conducting safety meetings, flagging prohibited or otherwise excluded areas and additional administrative duties specific to this project. I will contact the RCD at regular intervals to verify the progress of the project.

I trust that the RCD will be diligent in the preparation of the application as time is of the essence for the implementation of this project..

Please feel free to contact me should you have any questions or comments regarding this letter or if I can be of any assistance during the application process.

Respectfully yours:

James J. Kral
RPF #2588
Forest Manager
Mountain Home DSF

Total acres within treatment area is 671, of that 310 acres will be treated.

Mt. Home Fuel Reduction Project

Site Plan Map

Map Features

- Treatment Area
- MHDSF Boundary
- Road

91 Acres

146 Acres

122 Acres

277 Acres

35 Acres

1:24,000

0 0.25 0.5 1 Miles

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MBidart
12/11

Parcel Map Explanation

Please disregard writing on the assessor's maps. The writing you see was for a project that was conducted adjacent to Mt. Home. As I stated in the narrative this is an important hub that will connect past projects and future projects. I wasn't sure if you wanted Mt. Home Forest delineated on the parcel maps or if you wanted just the maps for the projects areas. The Topo Map and the site plan map could be used to cross reference locations on the parcel map. The treatment areas are all over the state owned land referred to Mountain Home Demonstration State Forest.